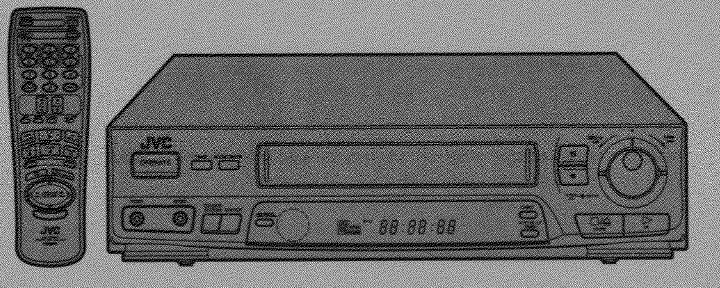
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J439EE/E539EE



VHS
PAL NTSC

Regarding service information other than these sections, refer to the HR-E639EE service manual (No. 82567).
Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J439EE)*

GENERAL

Power requirement	
Rating	: AC 110 – 240 V∿, 50/60 Hz
Operating	: AC 90 – 260 V∿, 50/60 Hz
Power consumption	: 20 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 x 94 x 340 mm
Weight	: 4.3 kg
Format	: VHS standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM) : 160 min. with T-160 video cassette (NTSC)
(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal,625 lines 50 fields : NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines (PAL/MESECAM) : 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 48 positions (+AUX position "AU")
Tuning system	: Voltage synthesized tuner
Channel coverage	: VHF (Low) 42 – 153MHz (High)153 – 470MHz UHF 470 – 870MHz
Aerial output	: UHF channels (Adjustable E32 – E40)
Memory backup time	: Approx. 18 hours.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6/UM-3" battery x 2

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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The following table indicate different points between models HR-E639EE, HR-E539EE and HR-J439EE.

MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
HiFi-AUDIO	○	—	—
SIDE PANEL	○	○	—
WIDE QUALITY BUTTON	○	—	—
RENTAL RETURN BUTTON	○	—	—

Note : ・Mark ○ is used. ・Mark — is not used.

The following table indicate different parts number between models HR-E639EE, HR-J439EE and HR-E539EE.

PACKING AND ACCESSORY ASSEMBLY<M1>

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
101	PACKING CASE	PQ35361-17	PQ35361-18	PQ35532-61
102	CUSHION ASSEMBLY	PQ35362A-1	←	PQ35533A-2
103	POLY(FOAM)BAG	PQM30021-95	←	PQM30021-93
⚠ 110	INSTRUCTIONS	PU30425-1824 PU30425-1825	← ←	PU30425-1948 PU30425-1954

CABINET AND CHASSIS ASSEMBLY <M2>

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
150	FRONT PANEL ASSEMBLY	PQ11802AP	PQ11802AQ	PQ11906W
150A	CASSETTE DOOR	PQ21818-22	PQ21818-30	PQ21915-16
⚠ 151	TOP COVER	PQ11676-31	←	PQ11676-7
152	SCREW,X4 TOP COVER(SIDE)	PQ43930	←	SDSF3010M
154	KNOB(JOG)	PQ35247-5	←	PQ35472
155	KNOB(SHUTTLE)	PQ35295-5	←	PQ35471

REF.NO.	ITEM / MODEL	HR-E639EE	HR-E539EE	HR-J439EE
159A	DRUM SUB ASSEMBLY	PDM2261AC	PDM2282K	←
159B	UPPER DRUM ASSEMBLY	PDM3353AW	PDM3403K	←
159K	WASHER	PDM4050-9	PDM4050-10	←
WR2	WIRE,SW/JACK	PW30803-0514	PW30802-0714	←

MECHANISM ASSEMBLY<M4>

REF.NO.	ITEM / MODEL	HR-E639EE	HR-E539EE	HR-J439EE
85	CLEANER ASSEMBLY	—	PQ46436A-1	←
85A	CLEANER ROLLER	—	PQ46418-1-2	←
85B	CLEANER	—	PQ46419-1-2	←
85C	CLEANER ARM	—	PQ35159-1-1	←

MAIN BOARD ASSEMBLY <03>

REF.NO.	ITEM / MODEL	HR-E639EE	HR-E539EE	HR-J439EE
PW1	MAIN BOARD ASSEMBLY	PB11003M	PB11003N	←
IC401	IC	JCP0056	—	—
IC402	IC	BA6138	—	—
IC501	IC	LA7257	—	—
IC701	QFD IC(MCU)	HD6433928TA49F	HD6433928TA44F	←
Q4	TRANSISTOR	2SA1576(QRS)	—	—
Q5	TRANSISTOR	2SA1576(QRS)	—	—
Q301	TRANSISTOR	—	DTC114EU	←
Q302	TRANSISTOR	—	DTA144WU	←
Q303	TRANSISTOR	—	DTC114TU	←
Q503	TRANSISTOR	2SC4081(QRS)	—	—
D13	DIODE	1SS133	—	—
D14	DIODE	1SS133	—	—
D153	DIODE	—	1N4148M	←
D461	DIODE	1N4148M	—	—
D502	DIODE	1N4148M	—	—
D503	DIODE	1N4148M	—	—
D504	DIODE	1N4148M	—	—
D505	DIODE	1N4148M	—	—
D952	FR DIODE	FML-12S	—	—
D954	BARRIER DIODE	FMB-24	—	—
D972	FR DIODE	—	AU01Z	←
D973	FR DIODE	—	AU01Z	←
D974	FR DIODE	—	AU01Z	←
D975	FR DIODE	—	AK04	←
R15	RESISTOR	QRSA08J-392YN	—	—
R16	RESISTOR	QRSA08J-272YN	—	—
R23	RESISTOR	QRSA08J-683YN	—	—

Notes : ・Mark — is not used.
・Mark ← is same as left.

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
R24	RESISTOR	QRSA08J-223YN	—	—
R25	RESISTOR	QRSA08J-102YN	—	—
R26	RESISTOR	QRSA08J-473YN	—	—
R27	RESISTOR	QRSA08J-333YN	—	—
R28	RESISTOR	QRSA08J-560YN	—	—
R41	RESISTOR	QRSA08J-200YN	QRSA08J-0R0Y	←
R213	RESISTOR	QRSA08J-0R0Y	QRSA08J-222YN	←
R285	RESISTOR	QRSA08J-682YN	—	—
R286	RESISTOR	QRSA08J-332YN	—	—
R287	RESISTOR	QRSA08J-682YN	—	—
R288	RESISTOR	QRSA08J-471YN	QRSA08J-0R0Y	←
R289	RESISTOR	QRSA08J-103YN	—	—
R301	RESISTOR	QRSA08J-0R0Y	QRSA08J-221YN	←
R302	RESISTOR	—	QRSA08J-183YN	←
R303	RESISTOR	—	QRSA08J-393YN	←
R337	RESISTOR	QRSA08J-221YN	—	—
R338	RESISTOR	QRSA08J-103YN	—	—
R348	RESISTOR	QRSA08J-101YN	—	—
R401	RESISTOR	QRSA08J-393YN	—	—
R402	RESISTOR	QRSA08J-393YN	—	—
R404	RESISTOR	QRSA08J-183YN	—	—
R405	RESISTOR	QRSA08J-183YN	—	—
R407	RESISTOR	QRSA08J-511YN	—	—
R408	RESISTOR	QRSA08J-472YN	—	—
R409	RESISTOR	QRSA08J-123YN	—	—
R410	RESISTOR	QRSA08J-392YN	—	—
R411	RESISTOR	NRVA62B-153N	—	—
R412	RESISTOR	QRSA08J-682YN	—	—
R415	RESISTOR	QRSA08J-473YN	—	—
R416	RESISTOR	QRSA08J-274YN	—	—
R417	RESISTOR	QRSA08J-222YN	—	—
R418	RESISTOR	NRVA62B-113N	—	—
R419	RESISTOR	QRSA08J-392YN	—	—
R420	RESISTOR	QRSA08J-123YN	—	—
R421	RESISTOR	QRSA08J-472YN	—	—
R422	RESISTOR	QRSA08J-511YN	—	—
R424	RESISTOR	QRSA08J-183YN	—	—
R425	RESISTOR	QRSA08J-183YN	—	—
R427	RESISTOR	QRSA08J-393YN	—	—
R428	RESISTOR	QRSA08J-393YN	—	—
R430	RESISTOR	QRSA08J-222YN	—	—
R432	RESISTOR	QRSA08J-222YN	—	—
R434	RESISTOR	QRSA08J-103YN	—	—
R435	RESISTOR	QRSA08J-183YN	—	—
R436	RESISTOR	QRSA08J-183YN	—	—

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
R437	RESISTOR	QRSA08J-103YN	—	—
R438	RESISTOR	QRSA08J-221YN	—	—
R440	RESISTOR	QRSA08J-102YN	—	—
R441	RESISTOR	QRSA08J-102YN	—	—
R442	RESISTOR	QRSA08J-102YN	—	—
R443	RESISTOR	QRSA08J-271YN	—	—
R461	RESISTOR	QRSA08J-472YN	—	—
R462	RESISTOR	QRSA08J-102YN	—	—
R501	RESISTOR	QRSA08J-271YN	—	—
R502	RESISTOR	QRSA08J-182YN	—	—
R503	RESISTOR	QRSA08J-223YN	—	—
R506	RESISTOR	QRSA08J-122YN	—	—
R507	RESISTOR	QRSA08J-681YN	—	—
R516	RESISTOR	QRSA08J-563YN	—	—
R517	RESISTOR	QRSA08J-562YN	—	—
R518	RESISTOR	QRSA08J-392YN	—	—
R519	RESISTOR	QRSA08J-271YN	—	—
R520	RESISTOR	QRSA08J-473YN	—	—
R521	RESISTOR	QRSA08J-562YN	—	—
R522	RESISTOR	QRSA08J-152YN	—	—
R523	RESISTOR	QRSA08J-104YN	—	—
R524	RESISTOR	QRSA08J-104YN	—	—
R525	RESISTOR	QRSA08J-222YN	—	—
R728	RESISTOR	QRSA08J-472YN	—	—
R751	RESISTOR	QRSA08J-103YN	—	—
R821	RESISTOR	QRSA08J-472YN	—	—
R851	RESISTOR	—	QRSA08J-104YN	←
R853	RESISTOR	—	QRSA08J-104YN	←
R854	RESISTOR	—	QRSA08J-104YN	←
R872	RESISTOR	QRSA08J-472YN	—	—
R970	RESISTOR	QRG01DJ-100X	QRG01DJ-220X	←
R971	RESISTOR	—	QRG01DJ-201X	←
C5	CAPACITOR	QCFA1HZ-103	QCTA1CH-221	←
C27	E CAPACITOR	QEKJ1CM-106	—	—
C49	E CAPACITOR	QEKJ1CM-106	—	—
C50	CAPACITOR	QCYA1HZ-103	—	—
C51	E CAPACITOR	QEKJ1CM-476	—	—
C52	E CAPACITOR	QEKJ1CM-106	—	—
C55	E CAPACITOR	—	QEKJ1CM-106	←
C151	CAPACITOR	—	QCBB1HJ-102	←
C250	CAPACITOR	—	QCYA1HK-103	←
C304	CAPACITOR	QCYA1EK-683	QCYA1EK-333	←
C305	CAPACITOR	—	QCYA1EK-333	←
C328	CAPACITOR	—	QCYA1HK-471	←

Notes : ・Mark — is not used.
・Mark ← is same as left.

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
C329	CAPACITOR	—	QCYA1EK-473	←
C351	CAPACITOR	—	QCYA1HK-103	←
C401	E CAPACITOR	QEKJ1CM-106	—	—
C402	E CAPACITOR	QEKJ1CM-106	—	—
C404	E CAPACITOR	QEKJ1CM-336	—	—
C405	CAPACITOR	QCYA1EK-473	—	—
C406	E CAPACITOR	QEKJ1CM-106	—	—
C407	E CAPACITOR	QEKJ0JM-476	—	—
C408	CAPACITOR	QCYA1HK-153	—	—
C409	CAPACITOR	QCYA1HK-103	—	—
C415	CAPACITOR	QCYA1HK-103	—	—
C416	CAPACITOR	QCYA1EK-473	—	—
C417	E CAPACITOR	QETC1HM-224	—	—
C419	CAPACITOR	QCYA1HK-103	—	—
C420	E CAPACITOR	QEKJ0JM-476	—	—
C421	CAPACITOR	QCYA1HK-153	—	—
C422	E CAPACITOR	QEKJ0JM-476	—	—
C423	E CAPACITOR	QEKJ1CM-106	—	—
C424	CAPACITOR	QCYA1EK-473	—	—
C425	E CAPACITOR	QEKJ1CM-336	—	—
C427	E CAPACITOR	QEKJ1CM-106	—	—
C428	E CAPACITOR	QEKJ1CM-106	—	—
C429	E CAPACITOR	QEKJ1CM-106	—	—
C431	E CAPACITOR	QEKJ1CM-476	—	—
C432	E CAPACITOR	QEKJ1HM-105	—	—
C433	E CAPACITOR	QEKJ1CM-106	—	—
C434	E CAPACITOR	QETC1CM-476	—	—
C435	E CAPACITOR	QETC1CM-476	—	—
C436	E CAPACITOR	QETC1CM-476	—	—
C437	E CAPACITOR	QEKJ1CM-106	—	—
C438	E CAPACITOR	QETC1HM-105	—	—
C439	E CAPACITOR	QETC1HM-105	—	—
C440	E CAPACITOR	QEKJ1CM-336	—	—
C441	E CAPACITOR	QEKJ1CM-336	—	—
C443	E CAPACITOR	QEKJ1CM-106	—	—
C461	E CAPACITOR	QEKJ1EM-475	—	—
C501	CAPACITOR	QCYA1HK-103	—	—
C502	CAPACITOR	QCFA1EZ-104	—	—
C503	CAPACITOR	QCYA1HK-103	—	—
C504	CAPACITOR	QCFA1EZ-104	—	—
C505	E CAPACITOR	QEKJ0JM-476	—	—
C506	CAPACITOR	QCYA1EK-104	—	—
C507	CAPACITOR	QCYA1EK-563	—	—
C508	CAPACITOR	QCYA1HK-221	—	—
C509	CAPACITOR	QCYA1HK-102	—	—

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
C510	CAPACITOR	QCYA1HK-103	—	—
C511	CAPACITOR	QCYA1HK-102	—	—
C512	CAPACITOR	QCYA1HK-103	—	—
C513	CAPACITOR	QCTA1CH-331	—	—
C517	CAPACITOR	QCYA1HK-102	—	—
C518	CAPACITOR	QCYA1HK-103	—	—
C519	CAPACITOR	QCYA1EK-223	—	—
C521	CAPACITOR	QCYA1HK-561	—	—
L11	COIL	PELN0975-101JZ	—	—
L213	COIL	—	PELN0530-561JZ	←
L353	BUS WIRE	QWY124	—	—
L354	BUS WIRE	QWY124	—	—
L501	COIL	PELN0530-100JZ	—	—
L502	COIL	PU59152-101J	—	—
J2	PIN JACK(SW),AUDIO IN/OUT R	PEMC1065-02	—	—
WR151	WIRE	—	QWE210-16A1A1	←
TB1	TERMINAL BOARD ASSY	PQ35383B-1	PQ35383P	←
CN1	CONNECTOR,UPPER DRUM	PEMC1163-009	PEMC1163-006	←
CN1403	CONNECTOR,SW/JACK	PEMC1101-005	PEMC1101-007	←

DISPLAY BOARD ASSEMBLY <28>

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
PW1	DISPLAY BOARD ASSEMBLY	PB11028A1	PB11034A1	PB11033B1
IC1201	IC	UPD16311GC(P)	UPD16312GB(P)	←
D1205	DIODE	—	1N4148M	←
D1206	DIODE	1N4148M	RD9.1ES-T1B2	←
D1207	DIODE	1N4148M	—	—
D1209	DIODE	1N4148M	—	—
D1210	DIODE	1N4148M	—	—
D1211	DIODE	RD4.7ES-T1B2	—	—
D1213	LE DIODE,AUTO SP/LP	—	—	SLR-342DC3F
D1220	DIODE	1N4148M	—	—
D1221	DIODE	1N4148M	—	—
D1222	DIODE	—	1N4148M	←
R1201	RESISTOR	QRD161J-333	QRD161J-103	←
R1202	RESISTOR	QRD161J-333	QRD161J-103	←
R1203	RESISTOR	QRD161J-333	QRD161J-103	←
R1204	RESISTOR	QRD161J-333	QRD161J-103	←
R1207	RESISTOR	QRD161J-102	QRD161J-471	←
R1208	RESISTOR	QRD161J-563	QRD161J-103	←
R1209	RESISTOR	QRD161J-103	QRD161J-563	←
R1215	RESISTOR	QRD161J-103	QRD161J-472	←
R1216	RESISTOR	QRD161J-472	QRD161J-103	←

Notes : • Mark — is not used.
• Mark ← is same as left.

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
R1217	RESISTOR	QRD161J-151	—	—
R1219	RESISTOR	QRD161J-103	—	—
R1221	RESISTOR	—	—	QRD161J-331
C1201	E CAPACITOR	QEKC0JM-476	QEKC0JM-227	QETC0JM-227
C1202	CAPACITOR	QCFB1HZ-104	QCFB1HZ-473	←
C1203	E CAPACITOR	QEKC1HM-106	QEKC0JM-227	QETC0JM-227
C1204	CAPACITOR	QCSB1HJ-330	QCSB1HJ-470	←
C1206	E CAPACITOR	QEKC0JM-227	QEKC1HM-106	QETC1HM-106
C1207	CAPACITOR	QCVB1CM-103	QCBB1HJ-102	←
C1210	CAPACITOR	QCFB1HZ-473	—	—
C1211	CAPACITOR	QCFB1HZ-473	—	—
C1213	CAPACITOR	QCFB1HZ-104	—	—
C1221	CAPACITOR	—	QCFB1HZ-104	QCC11CJ-104
C1222	CAPACITOR	—	QCFB1HZ-104	—
C1223	CAPACITOR	—	QCFB1HZ-104	—
S1204	TACT SWITCH,CH SET	—	PESW0525-02Z	←
S1205	TACT SWITCH,PAUSE	PESW0525-02Z	—	—
S1206	TACT SWITCH	PESW0525-02Z, REC	—	PESW0525-02Z, AUTO SP/LP
S1207	TACT SWITCH	PESW0525-02Z, PLAY	PESW0525-02Z, STOP/EJECT	←
S1208	TACT SWITCH	PESW0525-02Z, STOP/EJECT	PESW0525-02Z, PLAY	←
S1213	TACT SWITCH,REVEW	—	—	PESW0525-02Z
S1215	TACT SWITCH,C.RESET	—	PESW0525-02Z	—
S1219	TACT SWITCH,REC	—	PESW0525-02Z	←
S1220	TACT SWITCH,PAUSE	—	PESW0525-02Z	←
S1225	TACT SWITCH,CH SET	PESW0525-02Z	—	—
S1236	TACT SWITCH,RENTAL RET	PESW0525-02Z	—	—
DI1201	FLUORESCENT DISPLAY PANEL	PEDP0160	PEDP0075-03	←
HD1	FDP HOLDER(L),DI1201	PQ34668	PQ34685	←
HD2	FDP HOLDER(R),DI1201	PQ34669	PQ34686	←
HD3	LED HOLDER,D1213	—	—	PQM30038-6
CN1202	CONNECTOR,SW/JACK	PEMC0889-15	PEMC0724-011	PEMC0724-007

REC SAFETY BOARD ASSEMBLY <32>

REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
PW3	REC SAEFTY BOARD ASSEMBLY	PB11028A3	PB11034A3	PB11033A3

CASSETTE SW BOARD ASSEMBLY <33>

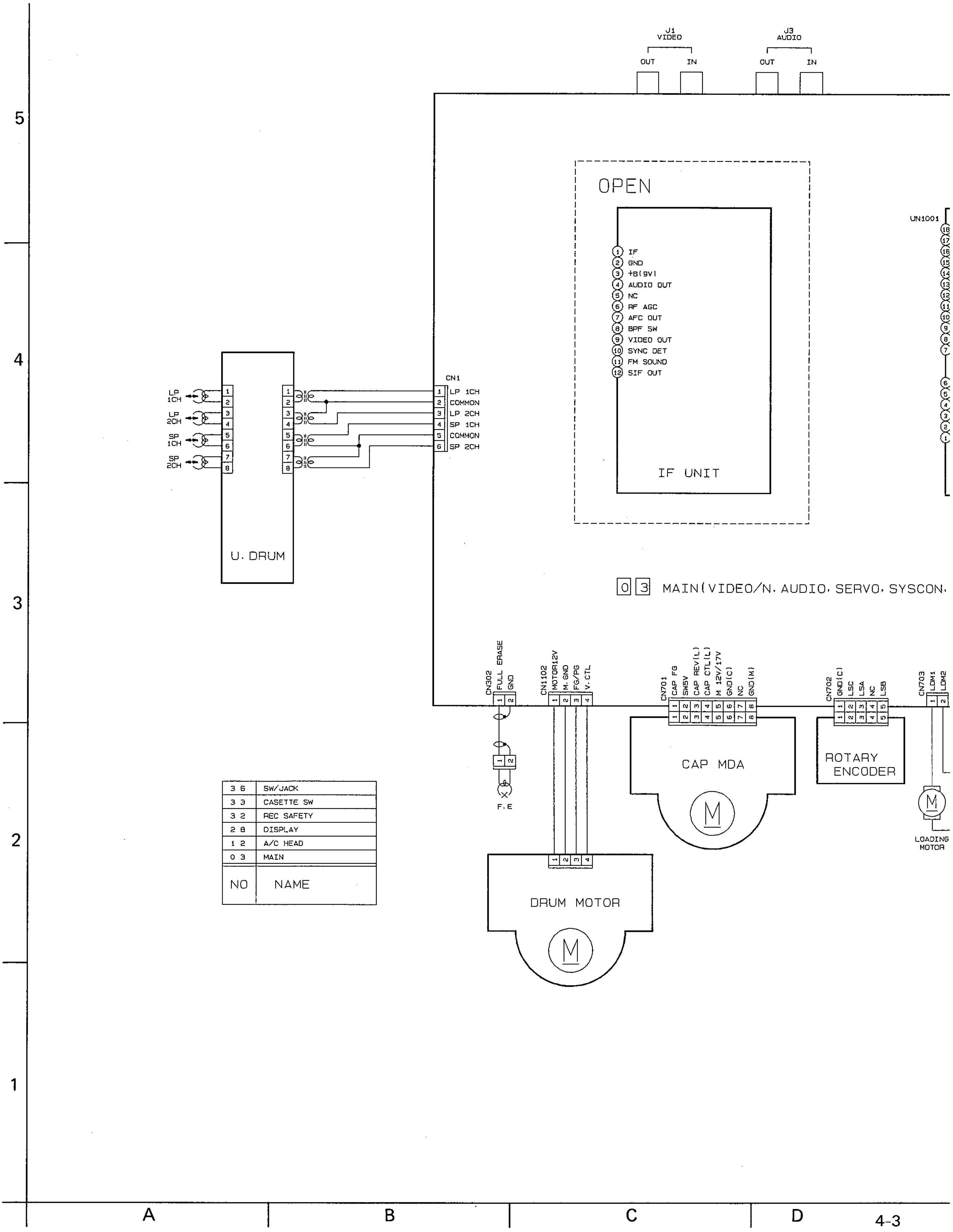
REF.NO.	MODEL ITEM	HR-E639EE	HR-E539EE	HR-J439EE
PW4	CASSETTE SWITCH BOARD ASSY	PB11028A4	PB11034A4	PB11033A4

SW/JACK BOARD ASSEMBLY <36>

REF.NO.	ITEM	HR-E639EE	HR-E539EE	HR-J439EE
PW2	SWITCH/JACK BOARD ASSEMBLY	PB11028A2	PB11034A2	PB11033B2
D1212	LE DIODE,OPERATE	SLR-342VC3F	—	—
D1213	LE DIODE	SLR-342MC3F, WIDE QUALITY	SLR-342DC3F, AUTO SP/LP	—
D1214	LE DIODE	SLR-342DC3F, AUTO SP/LP	SLR-342VC3F, OPERATE	—
R1221	RESISTOR	—	QRD161J-331	—
R1223	RESISTOR	—	QRD161J-331	—
R1241	RESISTOR	QRD161J-331	—	—
R1242	RESISTOR	QRD161J-331	—	—
R1243	RESISTOR	QRD161J-331	—	—
L1204	BUS WIRE	QWY124	—	QWY124
L1205	BUS WIRE	QWY124	—	QWY124
L1206	BUS WIRE	QWY124	—	QWY124
S1205	TACT SWITCH,COLOUR SYSTEM	—	PESW0525-02Z	←
S1206	TACT SWITCH,AUTO SP/LP	—	PESW0525-02Z	—
S1209	TACT SWITCH	PESW0525-02Z, COLOUR SYSTEM	—	PESW0525-02Z, INT.PICTUR
S1210	TACT SWITCH	PESW0525-02Z, TIMER	PESW0525-02Z, SCENE FIND	—
S1211	TACT SWITCH,TIMER	—	PESW0525-02Z	←
S1212	TACT SWITCH, SP/LP/EP	—	PESW0525-02Z	←
S1213	TACT SWITCH,REVIEW	PESW0525-02Z	←	—
S1215	TACT SWITCH, SP/LP/EP	PESW0525-02Z	—	—
S1216	TACT SWITCH	PESW0525-02Z AUTO SP/LP	PESW0525-02Z, DISPLAY	—
S1222	TACT SWITCH, AUDIO MONI	PESW0525-02Z	—	—
S1234	TACT SWITCH,WIDE	PESW0525-02Z	—	—
S1240	TACT SWITCH,S.FINDER	PESW0525-02Z	—	—
HD1	LED HOLDER,D1212	PQM30038-6	—	—
HD3	LED HOLDER,D1214	PQM30038-2-2	PQM30038-6	—
J1202	PIN JACK(SW),AUDIO L	PEMC1076	—	—
J1203	PIN JACK(SW)	PEMC1076, AUDIO R	PEMC1076, AUDIO	←
CN1203	CONNECTOR,DISPLAY	PEMC0825-015	PEMC0723-011	PEMC0825-007
CN1204	CONNECTOR,MAIN	PEMC1101-005	PEMC1101-007	←

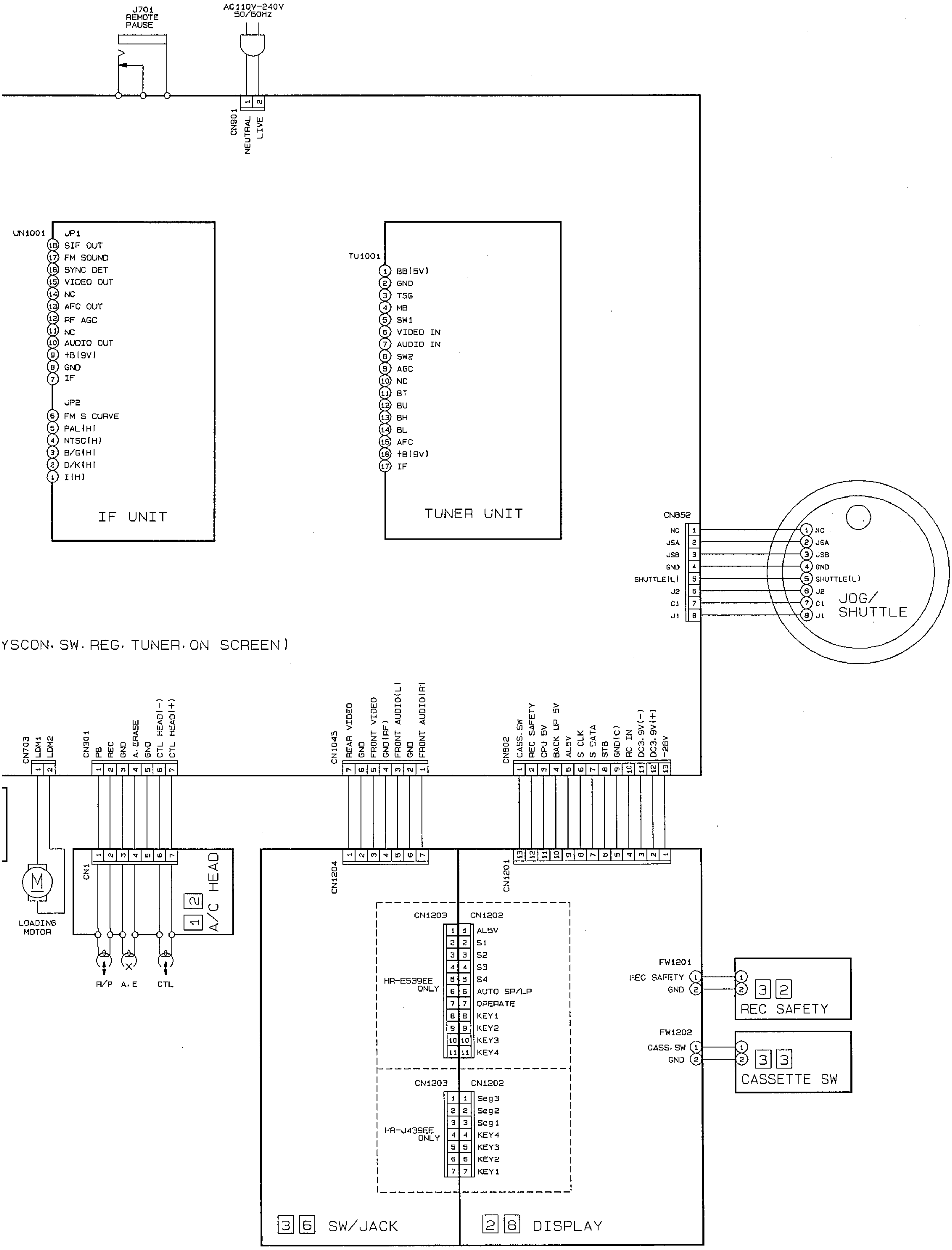
Notes : • Mark — is not used.
• Mark ← is same as left.

4.1 BOARD INTERCONNECTIONS

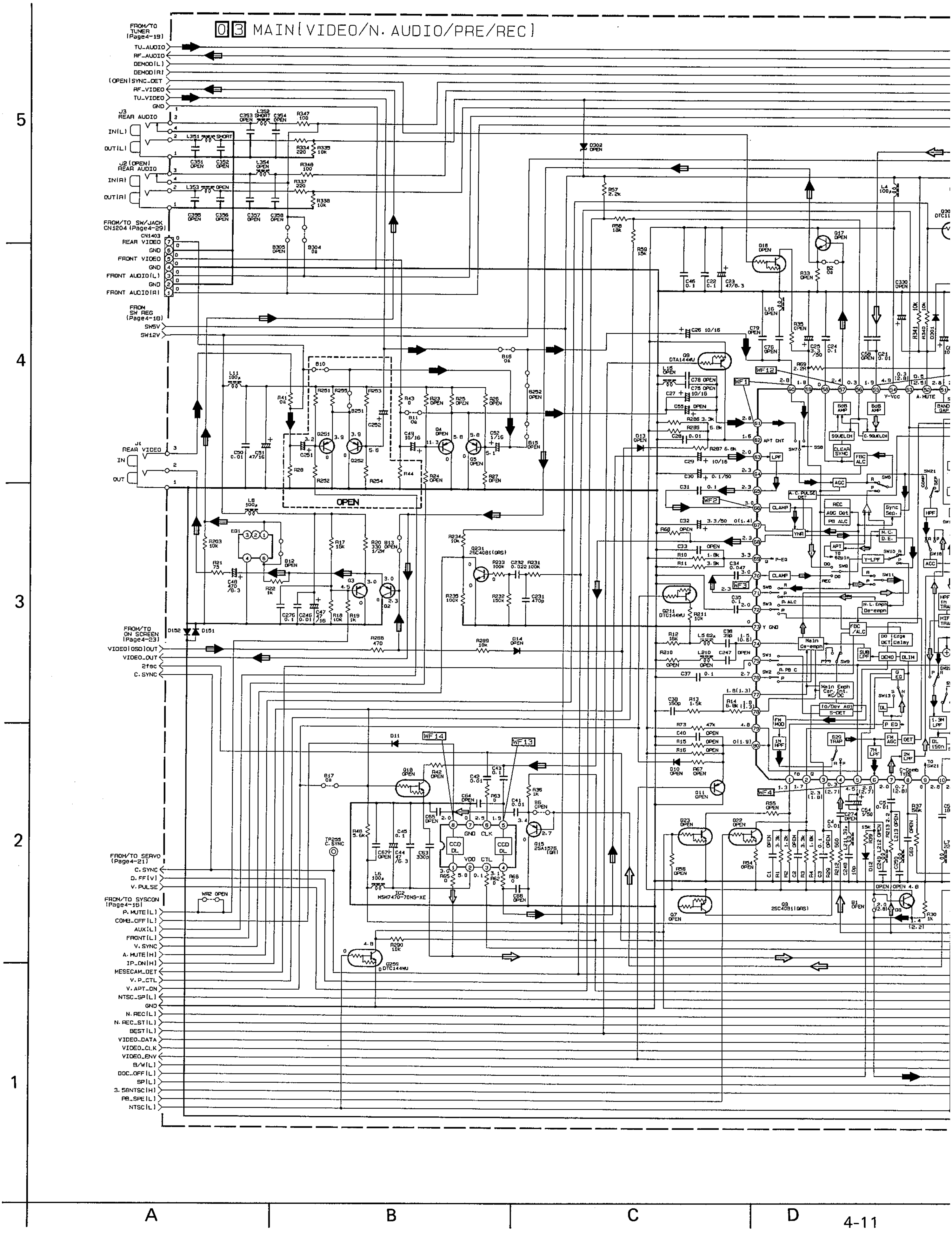

5
4
3
2
1
A
B
C
D
J1
VIDEO
OUT
IN
J3
AUDIO
OUT
IN
OPEN
① IF
② GND
③ +B(9V)
④ AUDIO OUT
⑤ NC
⑥ RF AGC
⑦ AFC OUT
⑧ BPF SW
⑨ VIDEO OUT
⑩ SYNC DET
⑪ FM SOUND
⑫ SIF OUT
IF UNIT
UN1001
LP 1CH
LP 2CH
SP 1CH
SP 2CH
U. DRUM
CN1
1 LP 1CH
2 COMMON
3 LP 2CH
4 SP 1CH
5 COMMON
6 SP 2CH
0 3 MAIN(VIDEO/N. AUDIO, SERVO, SYSCON,
CN302
FULL ERASE
GND
F.E
CN1102
MOTOR12V
M. GND
FG/PG
V. CTL
DRUM MOTOR
CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(L)
M 12V/17V
GND(C)
NC
GND(M)
CAP MDA
CN702
GND(C)
LSC
LSA
NC
LSB
ROTARY ENCODER
CN703
LDM1
LDM2
LOADING MOTOR
M

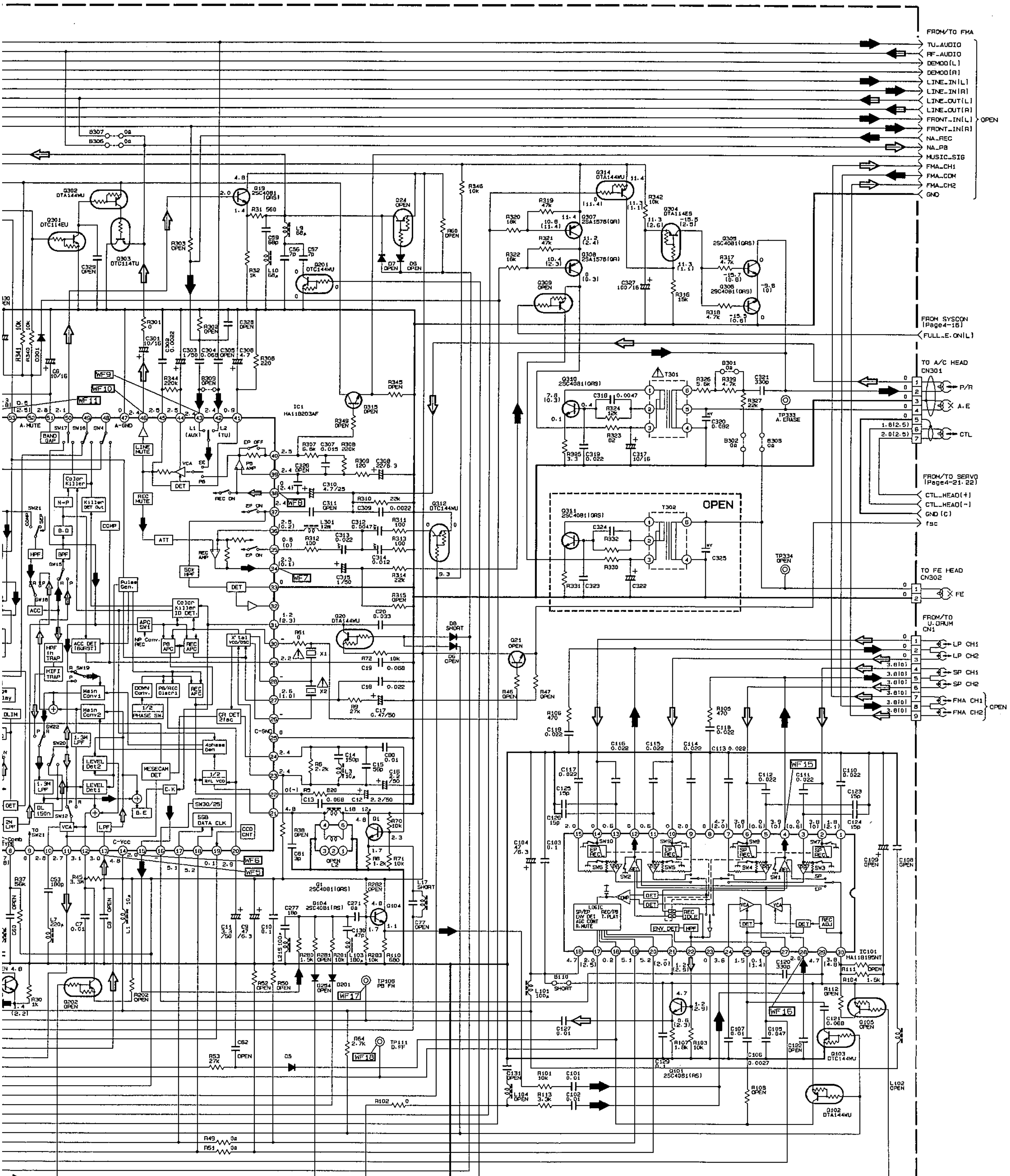
NO	NAME
3 6	SW/JACK
3 3	CASETTE SW
3 2	REC SAFETY
2 8	DISPLAY
1 2	A/C HEAD
0 3	MAIN

ECTION 4
AND DIAGRAMS


J701
REMOTE
PAUSE
AC110V-240V
50/60Hz
CN901
1
2
NEUTRAL
LIVE
UN1001
JP1
18 SIF OUT
17 FM SOUND
16 SYNC DET
15 VIDEO OUT
14 NC
13 AFC OUT
12 RF AGC
11 NC
10 AUDIO OUT
9 +B(9V)
8 GND
7 IF
JP2
6 FM S CURVE
5 PAL(H)
4 NTSC(H)
3 B/G(H)
2 D/K(H)
1 I(H)
IF UNIT
TU1001
1 BB(5V)
2 GND
3 TSG
4 MB
5 SW1
6 VIDEO IN
7 AUDIO IN
8 SW2
9 AGC
10 NC
11 BT
12 BU
13 BH
14 BL
15 AFC
16 +B(9V)
17 IF
TUNER UNIT
CN852
NC 1
JSA 2
JSB 3
GND 4
SHUTTLE(L) 5
J2 6
C1 7
J1 8
1 NC
2 JSA
3 JSB
4 GND
5 SHUTTLE(L)
6 J2
7 C1
8 J1
JOG/
SHUTTLE
YSCON, SW, REG, TUNER, ON SCREEN)
CN703
LDM1
LDM2
CN301
PB
REC
GND
A.ERASE
GND
CTL HEAD(-)
CTL HEAD(+)
CN1043
REAR VIDEO
GND
FRONT VIDEO
GND(RF)
FRONT AUDIO(L)
GND
FRONT AUDIO(R)
CN802
CASS. SW
REC SAFETY
CPU 5V
BACK UP 5V
AL5V
S CLK
S DATA
STB
GND(C)
RC IN
DC3. 9V(-)
DC3. 9V(+)
-28V
M
LOADING
MOTOR
CN1
1 2
A/C HEAD
R/P
A.E
CTL
CN1204
CN1201
CN1203
CN1202
AL5V
S1
S2
S3
S4
AUTO SP/LP
OPERATE
KEY1
KEY2
KEY3
KEY4
HR-E539EE
ONLY
CN1203
CN1202
Seg3
Seg2
Seg1
KEY4
KEY3
KEY2
KEY1
HR-J439EE
ONLY
3 6 SW/JACK
2 8 DISPLAY
FW1201
REC SAFETY 1
GND 2
3 2
REC SAFETY
FW1202
CASS. SW 1
GND 2
3 3
CASSETTE SW

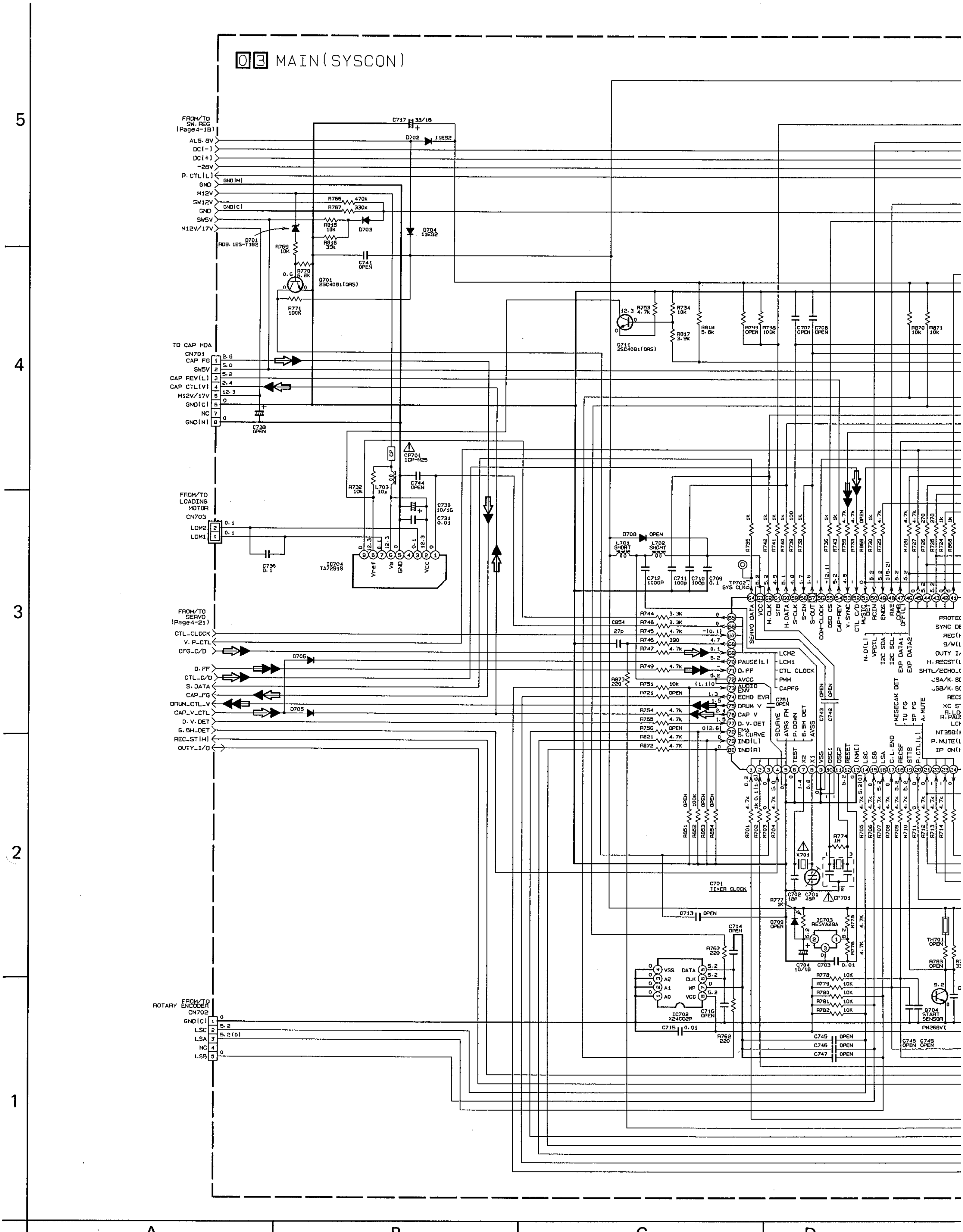
4.5 VIDEO, NORMAL AUDIO AND PRE/REC SCHEMATIC DIAGRAM

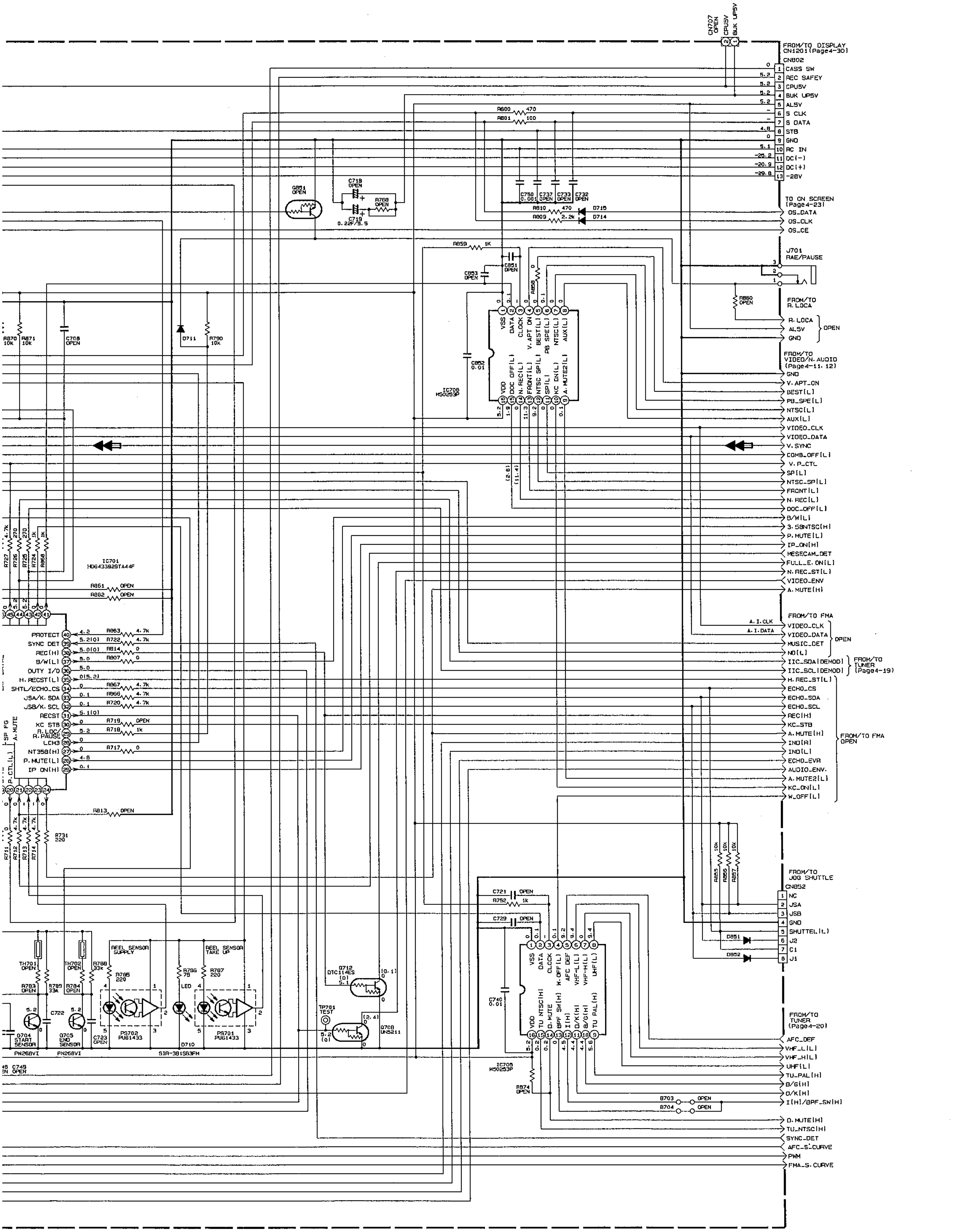

03 MAIN(VIDEO/N. AUDIO/PRE/REC)
FROM/TO TUNER (Page4-19)
TU_AUDIO
RF_AUDIO
DEMOD(L)
DEMOD(R)
(OPEN)SYNC_DET
RF_VIDEO
TU_VIDEO
GND
J3 REAR AUDIO
IN(L)
OUT(L)
J2 (OPEN) REAR AUDIO
IN(R)
OUT(R)
FROM/TO SW/JACK CN1204 (Page4-29)
CN1403
REAR VIDEO
FRONT VIDEO
FRONT AUDIO(L)
FRONT AUDIO(R)
FROM SW REG (Page4-16)
SW5V
SW12V
J1 REAR VIDEO
IN
OUT
OPEN
FROM/TO ON SCREEN (Page4-23)
VIDEO(OSD)OUT
VIDEO_OUT
2fsc
C.SYNC
FROM/TO SERVO (Page4-21)
C.SYNC
D.FF(V)
V.PULSE
FROM/TO SYSCON (Page4-16)
P.MUTE(L)
COMB_OFF(L)
AUX(L)
FRONT(L)
V.SYNC
A.MUTE(H)
IP_ON(H)
MESECAM_DET
V.P_CTL
V.APT_ON
NTSC_SP(L)
GND
N.REC(L)
N.REC_ST(L)
BEST(L)
VIDEO_DATA
VIDEO_CLK
VIDEO_ENV
B/W(L)
DOC_OFF(L)
SP(L)
3.58NTSC(H)
PB_SPE(L)
NTSC(L)
IC2 MN3N7470-70NS-XE
CCD DL
WF1
WF2
WF3
WF4
WF12
WF13
WF14
Q231 2SC4081(QRS)
Q211 DTC144WU
Q259 DTC144WU
Q9 DTA144WU
Q15 2SA1576(QR)
Q8 2SC4081(QRS)
A
B
C
D
5
4
3
2
1


FROM/TO FMA
TU_AUDIO
RF_AUDIO
DEMOD(L)
DEMOD(R)
LINE_IN(L)
LINE_IN(R)
LINE_OUT(L)
LINE_OUT(R)
FRONT_IN(L)
FRONT_IN(R)
NA_REC
NA_PB
MUSIC_SIG
FMA_CH1
FMA_COM
FMA_CH2
GND
OPEN
FROM SYSCON (Page4-16)
FULL_E.ON(L)
TO A/C HEAD CN301
P/R
A.E
CTL
FROM/TO SERVO (Page4-21,22)
CTL_HEAD(+)
CTL_HEAD(-)
GND(C)
fsc
TO FE HEAD CN302
FE
FROM/TO U.DRUM CN1
LP CH1
LP CH2
SP CH1
SP CH2
FMA CH1
FMA CH2
OPEN
IC1 HA118203AF
IC101 HA118195NT
T301
T302
OPEN
TP333 A.ERASE
TP334 OPEN
TP108 PB FM
TP111 D.FF
WF6
WF7
WF8
WF9
WF10
WF11
WF15
WF16
WF17
WF18

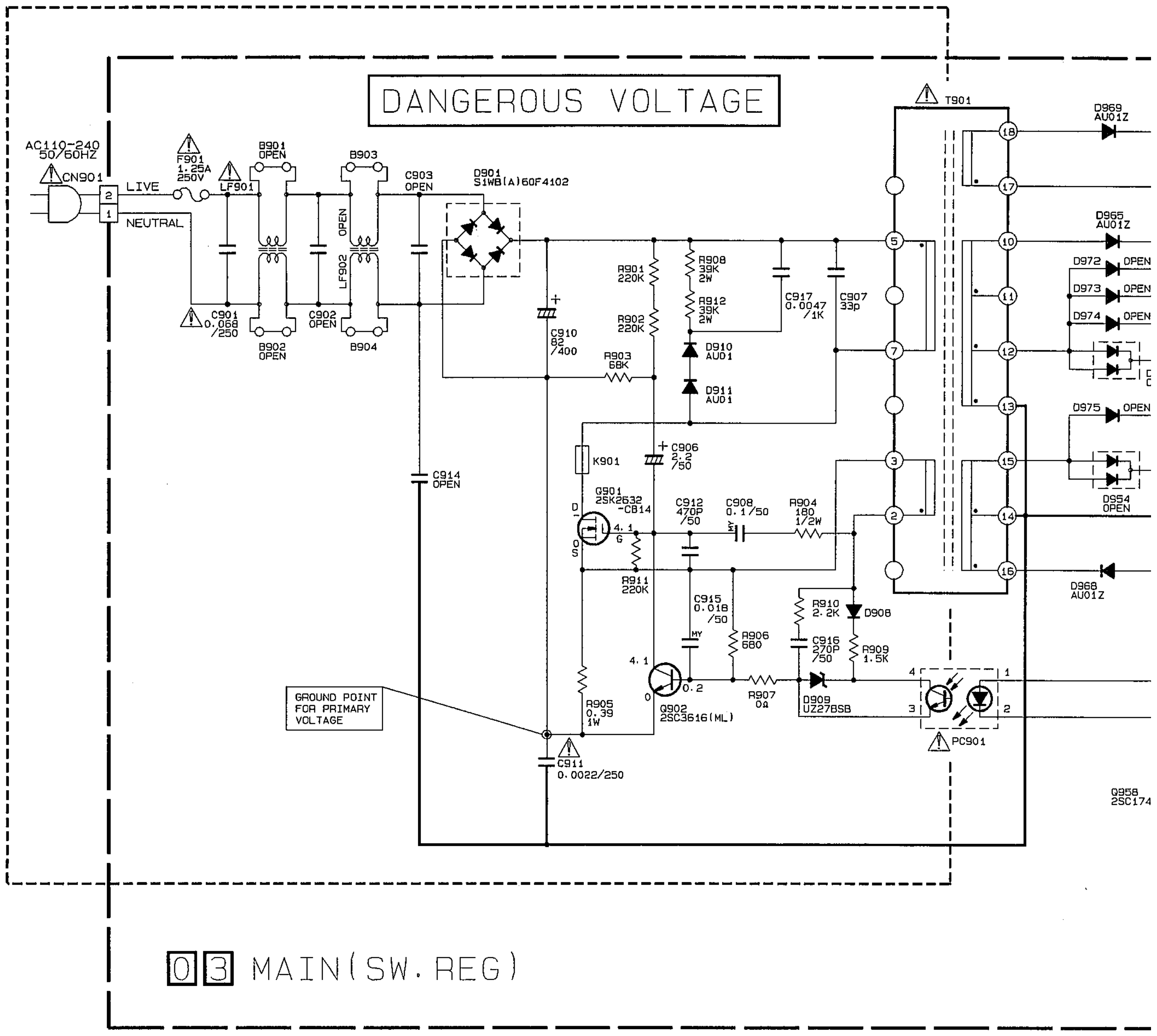
NOTE : For VIDEO waveforms, please refer to page4-25.

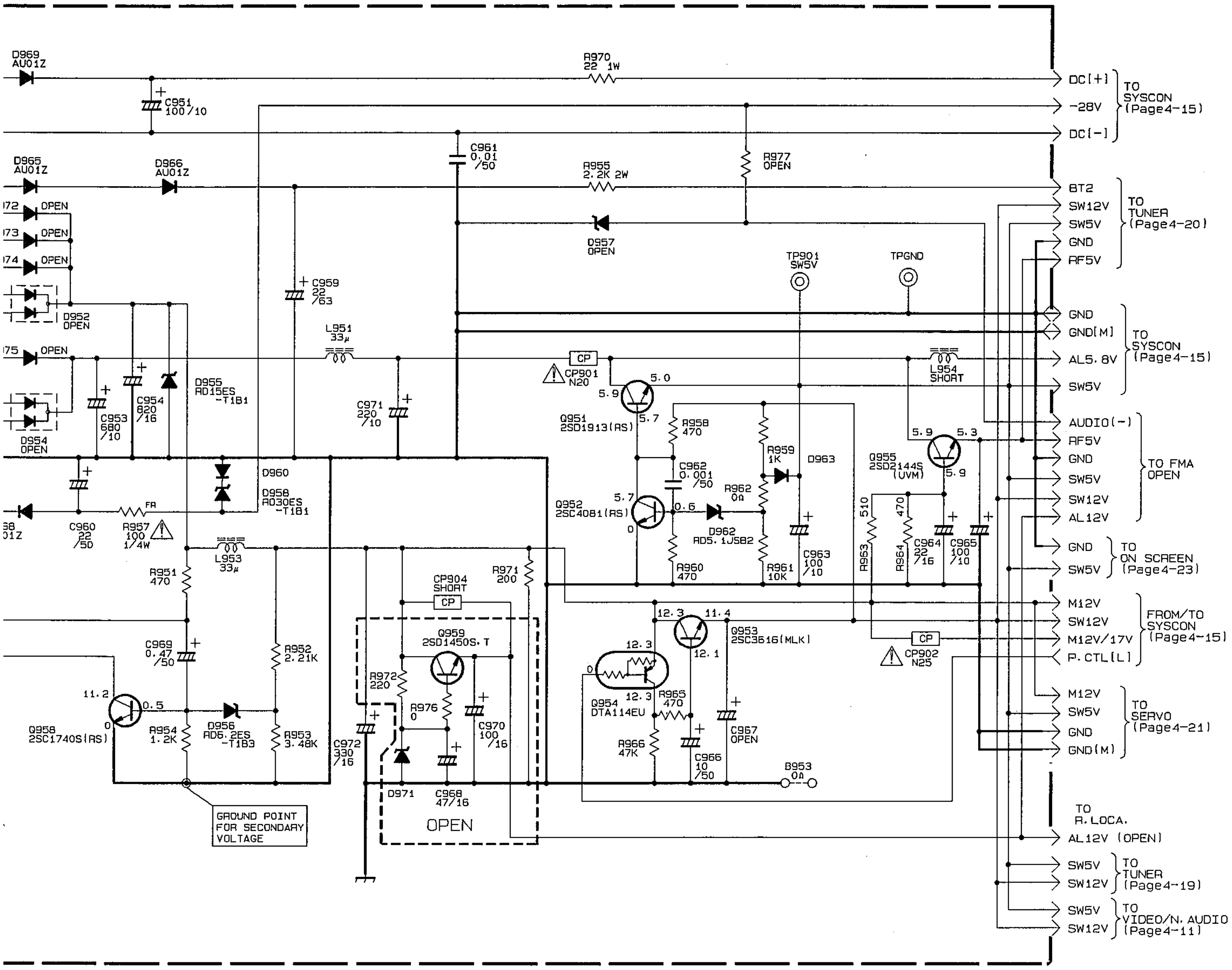
4.7 SYSTEM CONTROL SCHEMATIC DIAGRAM


03 MAIN(SYSCON)
FROM/TO SW.REG (Page4-18)
AL5.8V
DC(-)
DC(+)
-28V
P.CTL(L)
GND
M12V
SW12V
GND
SW5V
M12V/17V
C717 33/16
D702 11ES2
R766 470k
R767 330k
R815 10k
R816 39k
D703
D704 11ES2
D701 RD9.1ES-T1B2
R769 10K
R770 6.8K
Q701 2SC4081(QRS)
R771 100K
C741 OPEN
TO CAP MDA
CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(V)
M12V/17V
GND(C)
NC
GND(M)
C738 OPEN
CP701 ICP-N25
R732 10K
L703 10μ
C744 OPEN
C730 10/16
C731 0.01
FROM/TO LOADING MOTOR
CN703
LDM2
LDM1
C736 0.1
IC704 TA7291S
Vref
Vs
GND
Vcc
FROM/TO SERVO (Page4-21)
CTL_CLOCK
V.P_CTL
CFG_C/D
D.FF
CTL_C/D
S.DATA
CAP_FG
DRUM_CTL_V
CAP_V_CTL
D.V.DET
6.5H_DET
REC_ST(H)
DUTY_I/O
D705
Q711 2SC4081(QRS)
R753 4.7K
R734 10K
R817 3.9K
R818 5.6K
R799 OPEN
R798 10K
C707 OPEN
C706 OPEN
R870 10K
R871 10K
D708 OPEN
L701 SHORT
L702 SHORT
C712 1000P
C711 100P
C710 100P
C709 0.1
TP702 SYS CLK
C854 27p
R744 3.3K
R748 3.3K
R745 4.7K
R746 390
R747 4.7K
R749 4.7K
R873 220
R751 10K
R721 OPEN
R754 4.7K
R755 4.7K
R756 OPEN
R821 4.7K
R872 4.7K
PAUSE(L)
D.FF
AVCC
AUDIO ENV
ECHO EVR
DRUM V
CAP V
D.V.DET
EMA S.CURVE
IND(L)
IND(R)
LCM2
LCM1
CTL CLOCK
PWM
CAPFG
C781 OPEN
SERVO DATA
VCC
H.CLK
STB
H.DATA
S-CLK
S-IN
S-OUT
COM-CLOCK
OSD CS
CAP-REV
V.SYNC
CTL C/D
MUSIC DET
RCIN
ENDS
FAE COMP
OFF(L)
N.O(L)
VPCTL
I2C SDA
I2C SCL
EXP DATA1
EXP DATA2
MESECAM DET
TU FG
SP FG
A.MUTE
PROTEC
SYNC DE
REC(
B/W(
DUTY I/
H.RECST(
SHTL/ECHO_
USA/K.SC
USB/K.SC
REC
KC S
R.LO
R.PAU
LCM
NT358(
P.MUTE(
IP ON(
SCURVE
AVRG FN
P.DOWN
6.5H DET
AVSS
TEST
X2
X1
VSS
OSC1
OSC2
RESET
(NMI)
LSC
LSB
LSA
C.L.END
RECSP
STTS
P.CTL(L)
R851 OPEN
R852 100K
R853 OPEN
R854 OPEN
R701 4.7K
R702
R703
R704
R774 1M
X701
C701 TIMER CLOCK
C702 10P
C701 40P
CF701
R777 1K
C713 OPEN
D709 OPEN
IC703 RE5VA28A
R775 4.7K
R776 4.7K
C704 10/16
C703 0.01
C714 OPEN
R763 220
IC702 X24C02P
VSS
A2
A1
A0
DATA
CLK
WP
VCC
C716 OPEN
C715 0.01
R762 220
R778 10K
R779 10K
R780 10K
R781 10K
R782 10K
C745 OPEN
C746 OPEN
C747 OPEN
C748 OPEN
C749 OPEN
TH701 OPEN
R783 OPEN
Q704 START SENSOR
PN268VI
ROTARY ENCODER
FROM/TO
CN702
GND(C)
LSC
LSA
NC
LSB
5
4
3
2
1
A
B
C
D

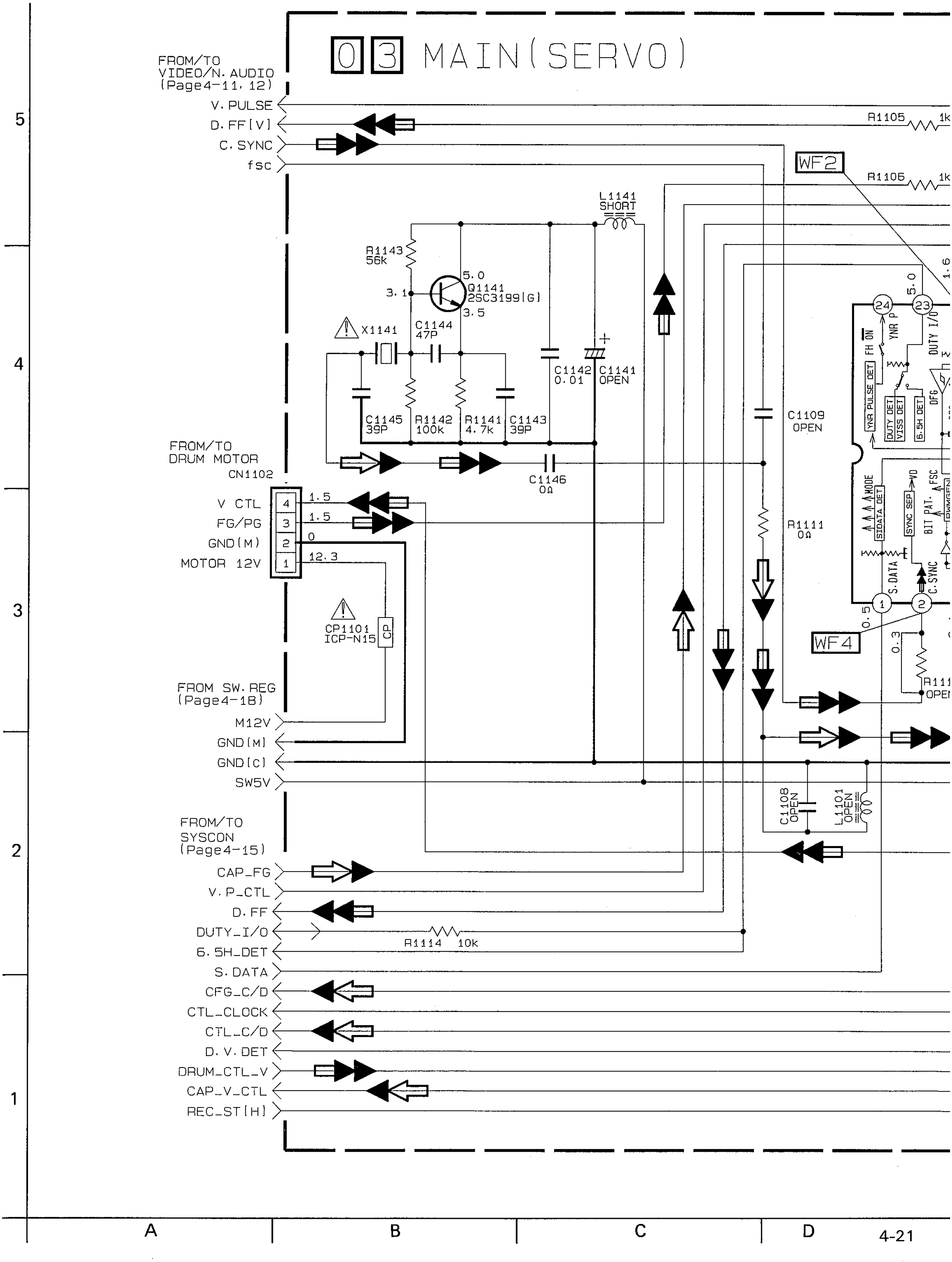

CN707 OPEN
CPU5V
BUK UP5V
FROM/TO DISPLAY CN1201(Page4-30)
CN802
1 CASS SW
2 REC SAFEY
3 CPU5V
4 BUK UP5V
5 AL5V
6 S CLK
7 S DATA
8 STB
9 GND
10 RC IN
11 DC(−)
12 DC(+)
13 −28V
0
5.2
5.2
5.2
5.2
4.8
0
5.1
−20.2
−20.9
−29.8
R800 470
R801 100
C750 0.001
C737 OPEN
C733 OPEN
C732 OPEN
R810 470
R809 2.2k
D716
D714
TO ON SCREEN (Page4-23)
OS_DATA
OS_CLK
OS_CE
Q881 OPEN
C718 OPEN
C719 0.22F/5.5
R768 OPEN
R859 1K
C851 OPEN
C853 OPEN
R858 0
C852 0.01
IC706 M50253P
VSS
DATA
CLOCK
V.APT ON
BEST(L)
PB SPE(L)
NTSC(L)
AUX(L)
VDD
DOC OFF(L)
N.REC(L)
FRONT(L)
NTSC SP(L)
SP(L)
KC ON(L)
A.MUTE2(L)
5.2
1.9
11.3
9.2
0.1
(2.6)
(11.4)
J701 RAE/PAUSE
R860 OPEN
FROM/TO R.LOCA
R.LOCA
AL5V
GND
OPEN
FROM/TO VIDEO/N.AUDIO (Page4-11, 12)
GND
V.APT_ON
BEST(L)
PB_SPE(L)
NTSC(L)
AUX(L)
VIDEO_CLK
VIDEO_DATA
V.SYNC
COMB_OFF(L)
V.P_CTL
SP(L)
NTSC_SP(L)
FRONT(L)
N.REC(L)
DOC_OFF(L)
B/W(L)
3.58NTSC(H)
P.MUTE(L)
IP_ON(H)
MESECAM_DET
FULL_E.ON(L)
N.REC_ST(L)
VIDEO_ENV
A.MUTE(H)
FROM/TO FMA
A.I.CLK
A.I.DATA
VIDEO_CLK
VIDEO_DATA
MUSIC_DET
NO(L)
OPEN
IIC_SDA(DEMOD)
IIC_SCL(DEMOD)
FROM/TO TUNER (Page4-19)
H.REC_ST(L)
ECHO_CS
ECHO_SDA
ECHO_SCL
REC(H)
KC_STB
A.MUTE(H)
IND(R)
IND(L)
ECHO_EVR
AUDIO_ENV.
A.MUTE2(L)
KC_ON(L)
W_OFF(L)
FROM/TO FMA OPEN
D711
R790 10k
R870 10k
R871 10k
C708 OPEN
R727 4.7k
R726 270
R725 270
R724 1k
R868 1k
IC701 HD6433928TA44F
R861 OPEN
R862 OPEN
45
44
43
42
41
PROTECT 40 4.2 R863 4.7k
SYNC DET 39 5.2(0) R722 4.7k
REC(H) 38 5.0(0) R814 0
B/W(L) 37 5.0 R807 0
DUTY I/O 36 5.0
H.RECST(L) 35 0(5.2)
SHTL/ECHO_CS 34 0 R867 4.7k
JSA/K.SDA 33 0.1 R866 4.7k
JSB/K.SCL 32 0.1 R720 4.7k
RECST 31 5.1(0)
KC STB 30 0 R719 OPEN
R.LOC/R.PAUSE 29 5.2 R718 1k
LCM3 28 0
NT358(H) 27 0 R717 0
P.MUTE(L) 26 4.6
IP ON(H) 25 0.1
SP FG
A.MUTE
P.CTL(L)
20
21
22
23
24
R813 OPEN
R711
R712 4.7k
R713 4.7k
R714 4.7k
R731 220
TH701 OPEN
R783 OPEN
R789 33k
C722
Q704 START SENSOR
PN268VI
TH702 OPEN
R784 OPEN
R788 33k
Q705 END SENSOR
PN268VI
C723 OPEN
REEL SENSOR SUPPLY
R785 220
PS702 PU61433
R786 75
LED
D710
SIR-381583FM
REEL SENSOR TAKE UP
R787 220
PS701 PU61433
C748 OPEN
C749 OPEN
Q712 DTC114ES
(0)
5.1
(0.1)
TP701 TEST
5.2
(0)
(2.4)
Q708 UN5211
C721 OPEN
R752 1k
C729 OPEN
C740 0.01
IC705 M50253P
VSS
DATA
CLOCK
W.OFF(L)
AFC DEF
VHF-L(L)
VHF-H(L)
UHF(L)
VDD
TU NTSC(H)
D.MUTE
BPF SW(H)
I(H)
D/K(H)
B/G(H)
TU PAL(H)
0.1
9.2
9.4
0.2
4.5
4.4
5.6
R874 OPEN
R855 10k
R856 10k
R857 10k
FROM/TO JOG SHUTTLE
CN852
1 NC
2 JSA
3 JSB
4 GND
5 SHUTTEL(L)
6 J2
7 C1
8 J1
D851
D852
FROM/TO TUNER (Page4-20)
AFC_DEF
VHF_L(L)
VHF_H(L)
UHF(L)
TU_PAL(H)
B/G(H)
D/K(H)
I(H)/BPF_SW(H)
B703 OPEN
B704 OPEN
D.MUTE(H)
TU_NTSC(H)
SYNC_DET
AFC_S-CURVE
PWM
FMA_S.CURVE

4.8 SWITCHING REGULATOR SCHMATIC DIAGRAM

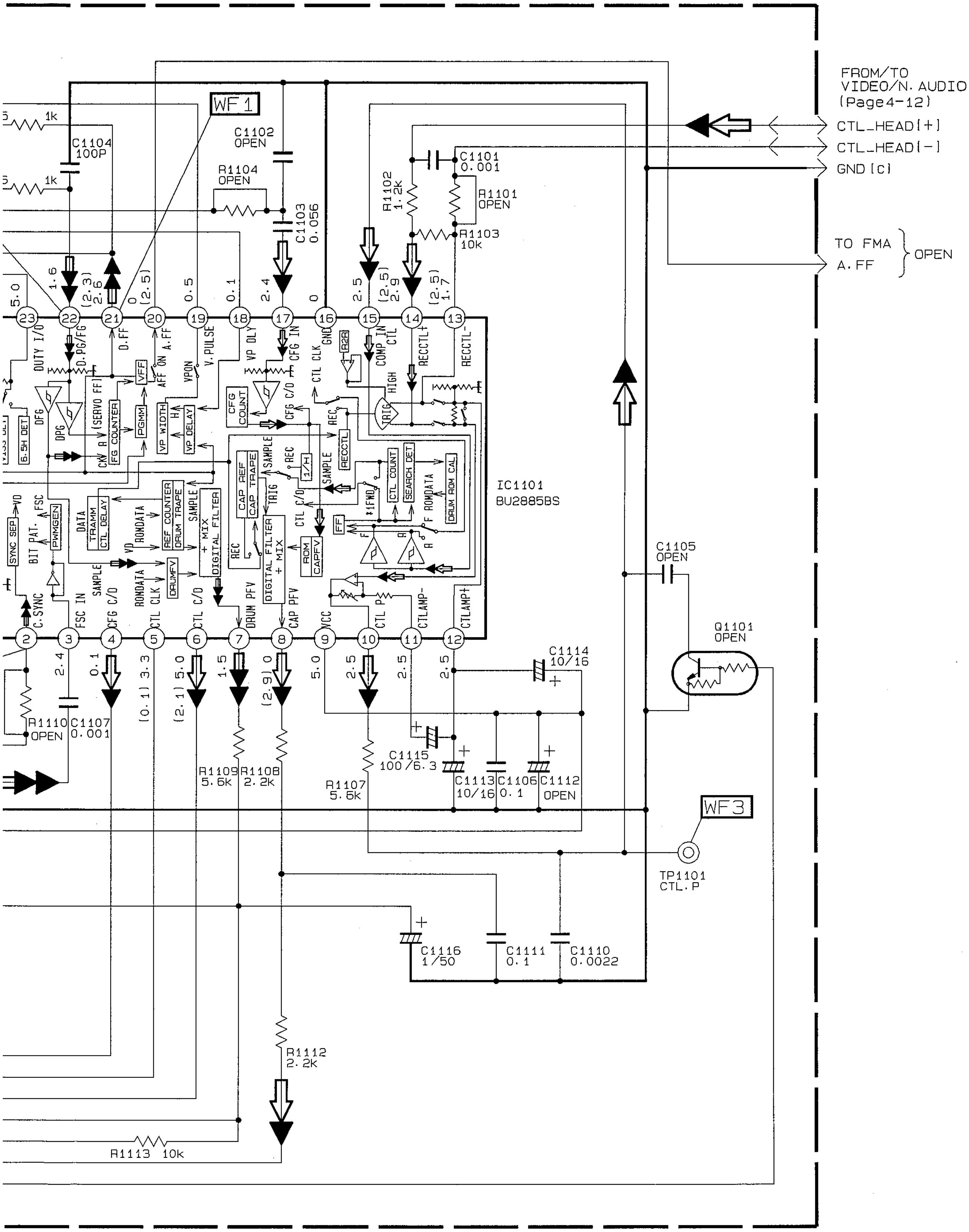

DANGEROUS VOLTAGE
AC110-240
50/60HZ
CN901
2
1
LIVE
NEUTRAL
F901
1.25A
250V
LF901
B901
OPEN
B902
OPEN
B903
B904
OPEN
LF902
C901
0.068
/250
C902
OPEN
C903
OPEN
D901
S1WB(A)60F4102
C910
82
/400
R901
220K
R902
220K
R903
68K
R908
39K
2W
R912
39K
2W
C917
0.0047
/1K
C907
33p
D910
AU01
D911
AU01
K901
C906
2.2
/50
C914
OPEN
Q901
2SK2632
-CB14
D
G
S
4.1
0
C912
470P
/50
C908
0.1/50
MY
R904
180
1/2W
R911
220K
C915
0.018
/50
R906
680
R910
2.2K
D908
C916
270P
/50
R909
1.5K
4.1
0.2
0
Q902
2SC3616(ML)
R905
0.39
1W
R907
0Ω
D909
UZ27BSB
GROUND POINT
FOR PRIMARY
VOLTAGE
C911
0.0022/250
PC901
4
3
1
2
T901
18
17
5
10
11
7
12
13
3
15
2
14
16
D969
AU01Z
D965
AU01Z
D972
OPEN
D973
OPEN
D974
OPEN
D975
OPEN
D954
OPEN
D968
AU01Z
Q958
2SC174
03 MAIN(SW.REG)
5
4
3
2
1
A
B
C
D


D969
AU01Z
R970
22 1W
C951
100/10
DC[+]
-28V
DC[-]
TO
SYSCON
(Page4-15)
D965
AU01Z
D966
AU01Z
C961
0.01
/50
R955
2.2K 2W
R977
OPEN
BT2
SW12V
SW5V
GND
RF5V
TO
TUNER
(Page4-20)
OPEN
OPEN
OPEN
D957
OPEN
TP901
SW5V
TPGND
D952
OPEN
C959
22
/63
GND
GND[M]
AL5.8V
SW5V
TO
SYSCON
(Page4-15)
OPEN
L951
33μ
CP
CP901
N20
L954
SHORT
D955
RD15ES
-T1B1
C953
680
/10
C954
820
/16
C971
220
/10
5.0
5.9
Q951
2SD1913(RS)
5.7
R958
470
D954
OPEN
D960
D958
RD30ES
-T1B1
C962
0.001
/50
R959
1K
D963
Q955
2SD2144S
(UVM)
5.9
5.3
5.9
AUDIO(-)
RF5V
GND
SW5V
SW12V
AL12V
TO FMA
OPEN
FR
Q952
2SC4081(RS)
5.7
0
0.6
R962
0Ω
D962
RD5.1JSB2
510
R953
470
R964
C964
22
/16
C965
100
/10
C960
22
/50
R957
100
1/4W
L953
33μ
C963
100
/10
R960
470
R961
10K
GND
SW5V
TO
ON SCREEN
(Page4-23)
R951
470
CP904
SHORT
CP
R971
200
M12V
SW12V
M12V/17V
P.CTL[L]
FROM/TO
SYSCON
(Page4-15)
12.3
11.4
Q953
2SC3616(MLK)
CP
CP902
N25
C969
0.47
/50
Q959
2SD1450S.T
R952
2.21K
R972
220
12.3
12.1
11.2
0.5
0
Q958
2SC1740S(RS)
R954
1.2K
D956
RD6.2ES
-T1B3
R953
3.48K
C972
330
/16
R976
0
C970
100
/16
Q954
DTA114EU
12.3
R965
470
R966
47K
C967
OPEN
C966
10
/50
B953
0Ω
M12V
SW5V
GND
GND(M)
TO
SERVO
(Page4-21)
D971
C968
47/16
OPEN
GROUND POINT
FOR SECONDARY
VOLTAGE
TO
R.LOCA.
AL12V (OPEN)
SW5V
SW12V
TO
TUNER
(Page4-19)
SW5V
SW12V
TO
VIDEO/N.AUDIO
(Page4-11)

4.10 SERVO SCHEMATIC DIAGRAM

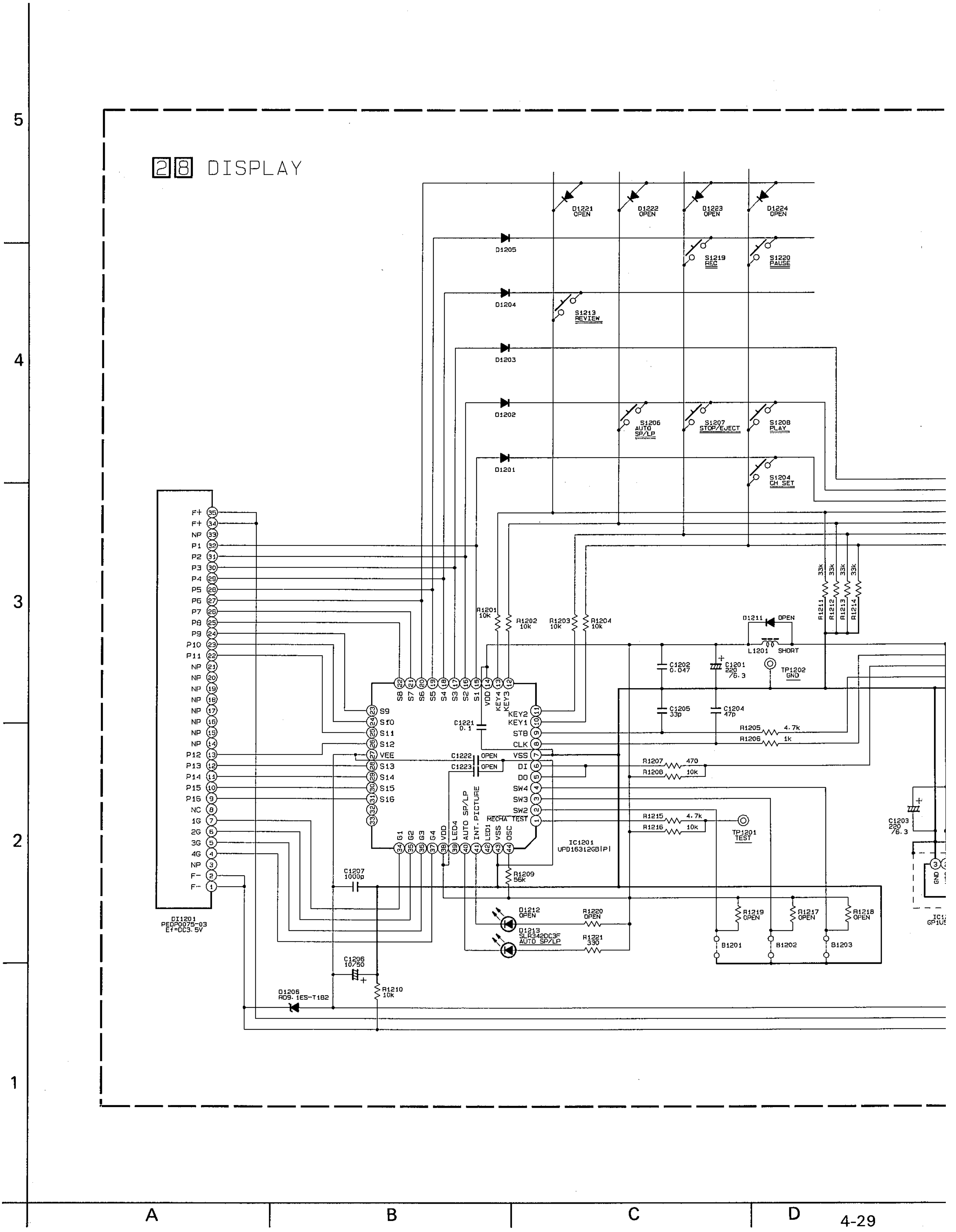


03 MAIN(SERVO)
FROM/TO VIDEO/N.AUDIO (Page4-11, 12)
V.PULSE
D.FF[V]
C.SYNC
fsc
R1105 1k
R1106 1k
WF2
L1141 SHORT
R1143 56k
3.1
5.0
Q1141 2SC3199(G)
3.5
X1141
C1144 47P
C1142 0.01
C1141 OPEN
C1145 39P
R1142 100k
R1141 4.7k
C1143 39P
C1109 OPEN
C1146 0Ω
R1111 0Ω
FROM/TO DRUM MOTOR
CN1102
V CTL
FG/PG
GND(M)
MOTOR 12V
4
3
2
1
1.5
1.5
0
12.3
CP1101 ICP-N15
CP
FROM SW.REG (Page4-18)
M12V
GND(M)
GND(C)
SW5V
C1108 OPEN
L1101 OPEN
FROM/TO SYSCON (Page4-15)
CAP_FG
V.P_CTL
D.FF
DUTY_I/O
R1114 10k
6.5H_DET
S.DATA
CFG_C/D
CTL_CLOCK
CTL_C/D
D.V.DET
DRUM_CTL_V
CAP_V_CTL
REC_ST[H]
24
23
5.0
1.6
YNR P
DUTY I/O
FH ON
YNR PULSE DET
DUTY DET
VISS DET
6.5H DET
DFG
MODE
SIDATA DET
SYNC SEP
VD
FSC
BIT PAT.
S.DATA
C.SYNC
1
2
0.5
0.3
WF4
R111
OPEN
5
4
3
2
1
A
B
C
D

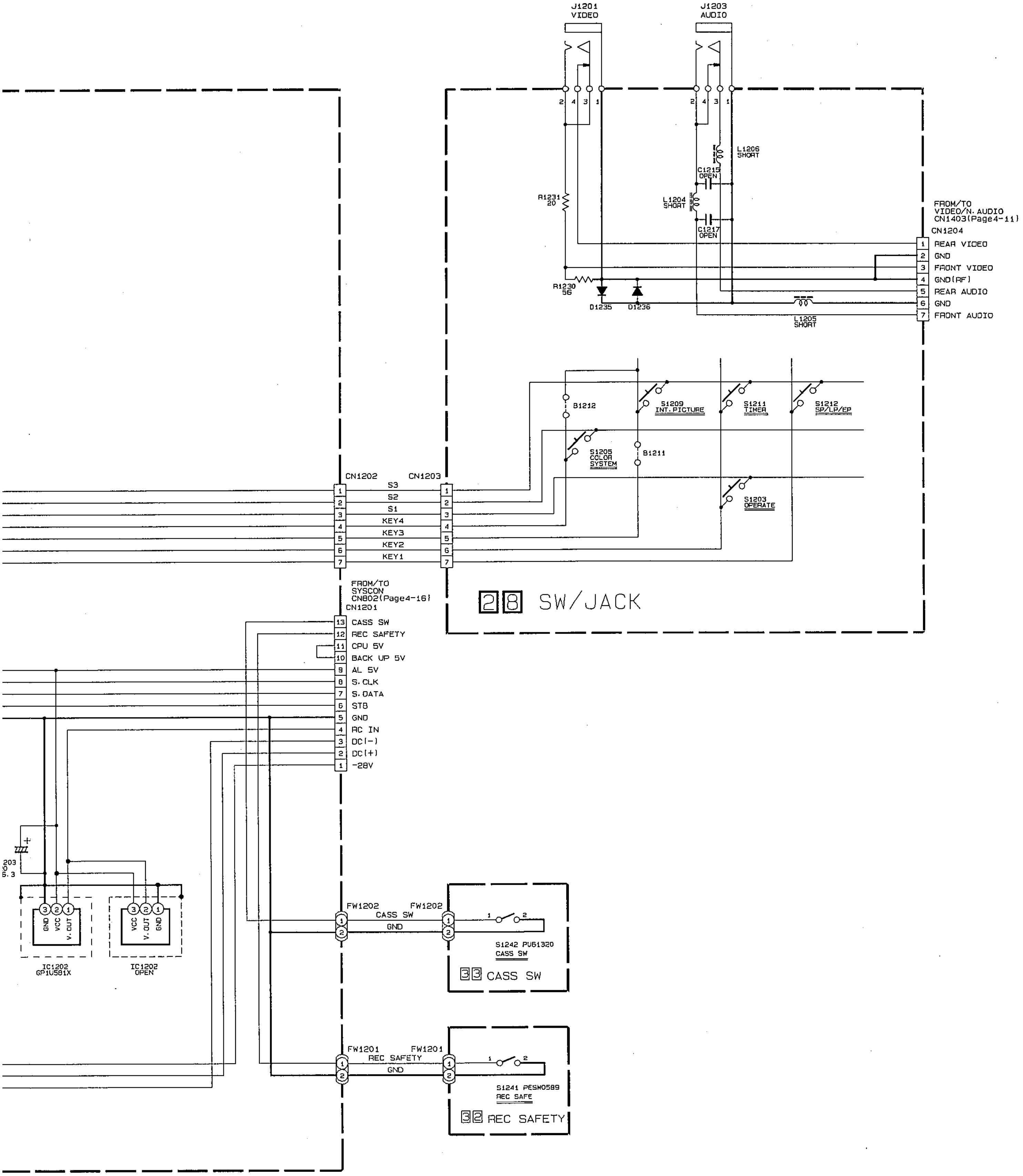

FROM/TO
VIDEO/N. AUDIO
(Page4-12)
CTL_HEAD(+)
CTL_HEAD(-)
GND (C)
TO FMA
A. FF
OPEN
WF 1
WF3
C1104
100P
1k
1k
C1102
OPEN
R1104
OPEN
C1103
0.056
C1101
0.001
R1102
1.2K
R1101
OPEN
R1103
10K
IC1101
BU2885BS
C1105
OPEN
Q1101
OPEN
C1114
10/16
C1115
100/6.3
C1113
10/16
C1106
0.1
C1112
OPEN
R1107
5.6K
R1109
5.6K
R1108
2.2K
R1110
OPEN
C1107
0.001
TP1101
CTL.P
C1116
1/50
C1111
0.1
C1110
0.0022
R1112
2.2K
R1113 10K
DUTY I/O
D.PG/FG
D.FF
AFF ON
A.FF
VPON
V.PULSE
VP DLY
CFG IN
CTL CLK
GND
R2R
COMP IN
CTL
HIGH
RECCTL+
RECCTL-
DFG
DPG
SERVO FF
FG COUNTER
PGMM
VFF
VP WIDTH
VP DELAY
CFG COUNT
CFG C/O
REC
TRIG
6.5H DET
CAP REF
CAP TRAPE
SAMPLE
1/H
RECCTL
CTL COUNT
SEARCH DET
DRUM ROM CAL
ROMDATA
FF
FWD
DATA
TRAMM
CTL DELAY
REF COUNTER
DRUM TRAPE
DIGITAL FILTER + MIX
ROMDATA
VD
DRUMFV
ROM
CAPFV
SYNC SEP
BIT PAT.
FSC
PWMGEN
C.SYNC
FSC IN
CFG C/O
CTL CLK
CTL C/O
DRUM PFV
CAP PFV
VCC
CTL P
CTLAMP-
CTLAMP+
5.0
1.6
(2.3)
2.6
0
(2.5)
0.5
0.1
2.4
0
2.5
(2.5)
2.9
(2.5)
1.7
2.4
0.1
(0.1) 3.3
(2.1) 5.0
1.5
(2.9) 0
5.0
2.5
2.5
2.5

NOTE : For SERVO waveforms, please refer to page4-25.

4.13 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW SCHEMATIC DIAGRAMS (for HR-J43

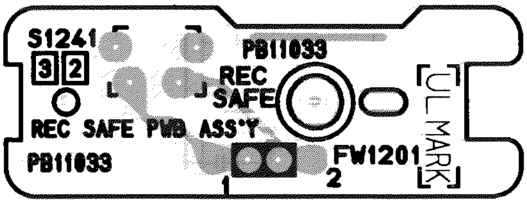


28 DISPLAY
D1221 OPEN
D1222 OPEN
D1223 OPEN
D1224 OPEN
D1205
S1219 REC
S1220 PAUSE
D1204
S1213 REVIEW
D1203
D1202
S1206 AUTO SP/LP
S1207 STOP/EJECT
S1208 PLAY
D1201
S1204 CH SET
F+ F+ NP P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 NP NP NP NP NP NP NP NP P12 P13 P14 P15 P16 NC 1G 2G 3G 4G NP F- F-
DI1201
PEDP0075-03
Ef=DC3.5V
R1201 10k
R1202 10k
R1203 10k
R1204 10k
R1211 33k
R1212 33k
R1213 33k
R1214 33k
D1211 OPEN
L1201 SHORT
C1202 0.047
C1201 220 /6.3
TP1202 GND
C1205 33p
C1204 47p
C1221 0.1
S8 S7 S6 S5 S4 S3 S2 S1 VDD KEY4 KEY3
S9 S10 S11 S12 VEE S13 S14 S15 S16
KEY2 KEY1 STB CLK VSS DI DO SW4 SW3 SW2 MECHA TEST
G1 G2 G3 G4 VDD LED4 AUTO SP/LP INT. PICTURE LED1 VSS OSC
C1222 OPEN
C1223 OPEN
R1205 4.7k
R1206 1k
R1207 470
R1208 10k
R1215 4.7k
R1216 10k
TP1201 TEST
IC1201
UPD16312GB(P)
R1209 56k
C1207 1000p
C1203 220 /6.3
D1212 OPEN
D1213 SLR342DC3F AUTO SP/LP
R1220 OPEN
R1221 330
R1219 OPEN
R1217 OPEN
R1218 OPEN
B1201
B1202
B1203
C1206 10/50
R1210 10k
D1206 RD9.1ES-T1B2
GND
IC1
GP1U
5
4
3
2
1
A
B
C
D


J1201
VIDEO
J1203
AUDIO
2 4 3 1
2 4 3 1
L1206
SHORT
C1215
OPEN
R1231
20
L1204
SHORT
C1217
OPEN
FROM/TO
VIDEO/N.AUDIO
CN1403(Page4-11)
CN1204
1 REAR VIDEO
2 GND
3 FRONT VIDEO
4 GND(RF)
5 REAR AUDIO
6 GND
7 FRONT AUDIO
R1230
56
D1235
D1236
L1205
SHORT
B1212
S1209
INT.PICTURE
S1211
TIMER
S1212
SP/LP/EP
S1205
COLOR
SYSTEM
B1211
S1203
OPERATE
CN1202
CN1203
1 S3
2 S2
3 S1
4 KEY4
5 KEY3
6 KEY2
7 KEY1
FROM/TO
SYSCON
CN802(Page4-16)
CN1201
13 CASS SW
12 REC SAFETY
11 CPU 5V
10 BACK UP 5V
9 AL 5V
8 S.CLK
7 S.DATA
6 STB
5 GND
4 RC IN
3 DC(-)
2 DC(+)
1 -28V
28 SW/JACK
203
0
6.3
3 2 1
GND VCC V.OUT
3 2 1
VCC V.OUT GND
IC1202
GP1U581X
IC1202
OPEN
FW1202
FW1202
CASS SW
GND
1 2
S1242 PU61320
CASS SW
33 CASS SW
FW1201
FW1201
REC SAFETY
GND
1 2
S1241 PESW0589
REC SAFE
32 REC SAFETY

4.14 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW CIRCUIT BOARDS (for HR-J439EE)

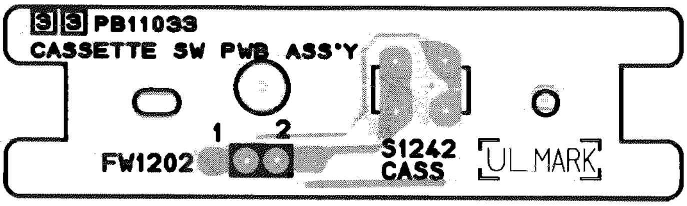
-REC SAFETY-


S1241
3 2
PB11033
REC
SAFE
REC SAFE PWB ASS'Y
PB11033
FW1201
1
2
UL MARK

COMPONENT PARTS LO

REF.No.	LOCATION		
CAPACITOR			
C1215	A	D	2A
C1217	A	D	2A
CONNECTOR			
CN1203	A	D	1A
CN1204	A	D	2C
DIODE			
D1235	A	D	3A
D1236	A	D	3A
JACK			
J1201	A	D	3A
J1203	A	D	2A
COIL			
L1204	A	D	2A
L1205	A	D	2B
L1206	A	D	2B

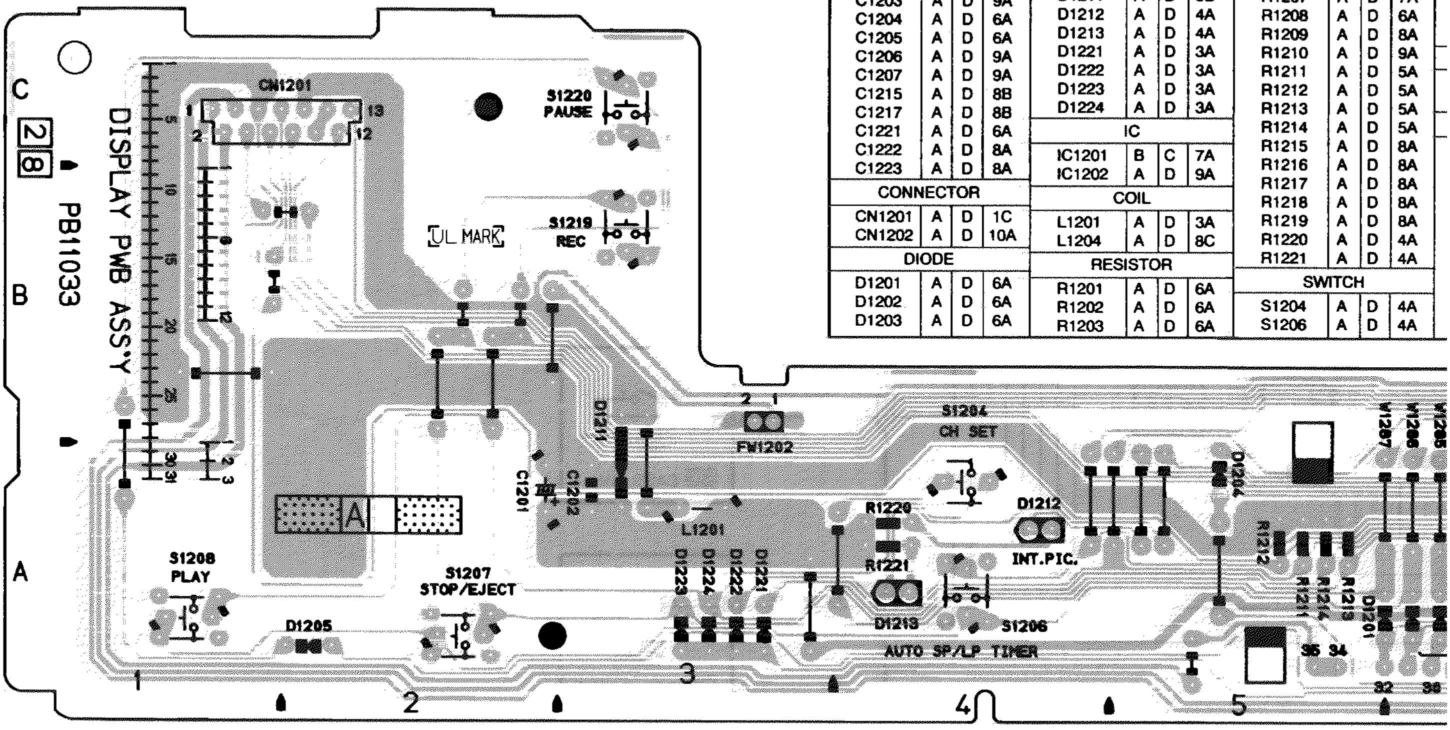
-CASSETTE SW-


3 3 PB11033
CASSETTE SW PWB ASS'Y
1
2
FW1202
S1242
CASS
UL MARK

-DISPLAY-

COMPONENT PARTS LOCATION GUIDE <DISPLAY PWB>

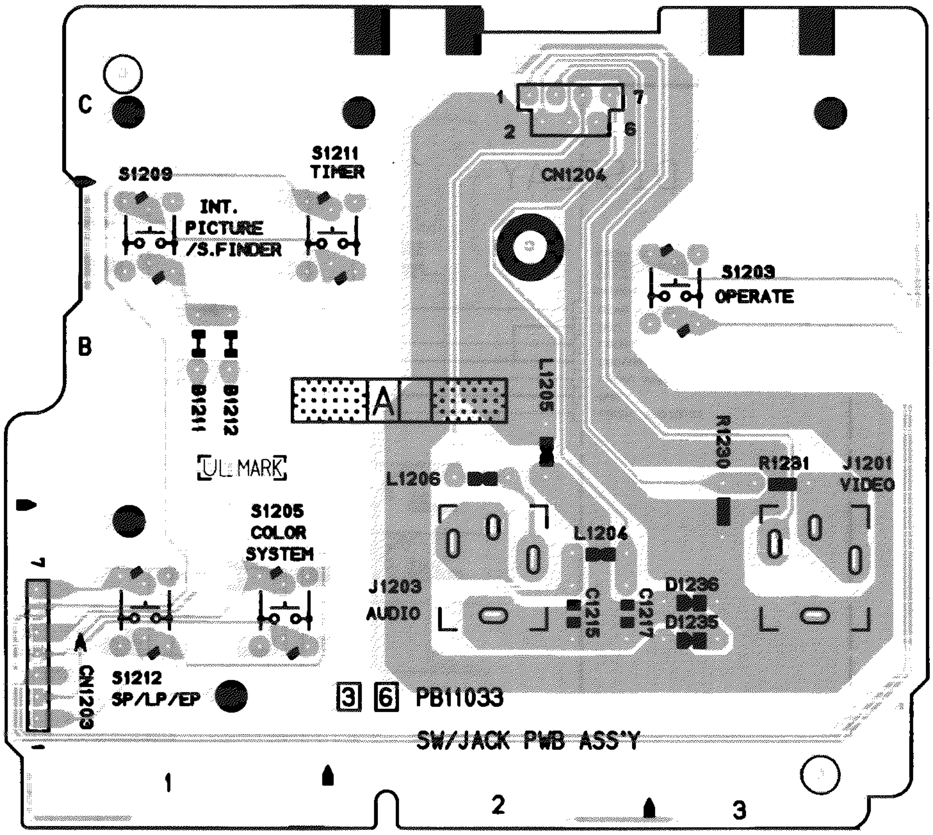
REF.No.	LOCATION		
CAPACITOR			
C1201	A	D	2A
C1202	A	D	3A
C1203	A	D	9A
C1204	A	D	6A
C1205	A	D	6A
C1206	A	D	9A
C1207	A	D	9A
C1215	A	D	8B
C1217	A	D	8B
C1221	A	D	6A
C1222	A	D	8A
C1223	A	D	8A
CONNECTOR			
CN1201	A	D	1C
CN1202	A	D	10A
DIODE			
D1201	A	D	6A
D1202	A	D	6A
D1203	A	D	6A
D1204	A	D	5A
D1205	A	D	2A
D1206	A	D	9A
D1211	A	D	3B
D1212	A	D	4A
D1213	A	D	4A
D1221	A	D	3A
D1222	A	D	3A
D1223	A	D	3A
D1224	A	D	3A
IC			
IC1201	B	C	7A
IC1202	A	D	9A
COIL			
L1201	A	D	3A
L1204	A	D	8C
RESISTOR			
R1201	A	D	6A
R1202	A	D	6A
R1203	A	D	6A
R1204	A	D	6A
R1205	A	D	6A
R1206	A	D	6A
R1207	A	D	7A
R1208	A	D	6A
R1209	A	D	8A
R1210	A	D	9A
R1211	A	D	5A
R1212	A	D	5A
R1213	A	D	5A
R1214	A	D	5A
R1215	A	D	8A
R1216	A	D	8A
R1217	A	D	8A
R1218	A	D	8A
R1219	A	D	8A
R1220	A	D	4A
R1221	A	D	4A
SWITCH			
S1204	A	D	4A
S1206	A	D	4A


C
B
A
2 8
DISPLAY PWB ASS'Y
PB11033
CN1201
1
2
13
12
S1220
PAUSE
S1219
REC
UL MARK
D1211
C1201
C1202
L1201
FW1202
S1204
CH SET
R1220
D1212
INT.PIC.
R1221
D1213
S1206
AUTO SP/LP TIMER
S1208
PLAY
S1207
STOP/EJECT
D1205
D1223
D1224
D1222
D1221
D1204
R1212
R1211
R1214
R1213
D1201
W1207
W1206
W1205
35
34
32
33
1
2
3
4
5

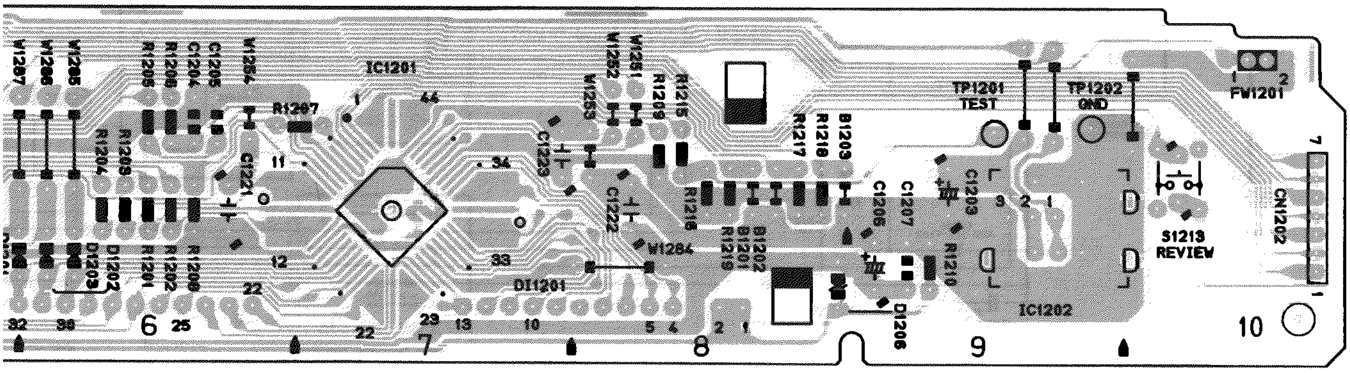
-SW/JACK-

ARTS LOCATION GUIDE <SW/JACK PWB>

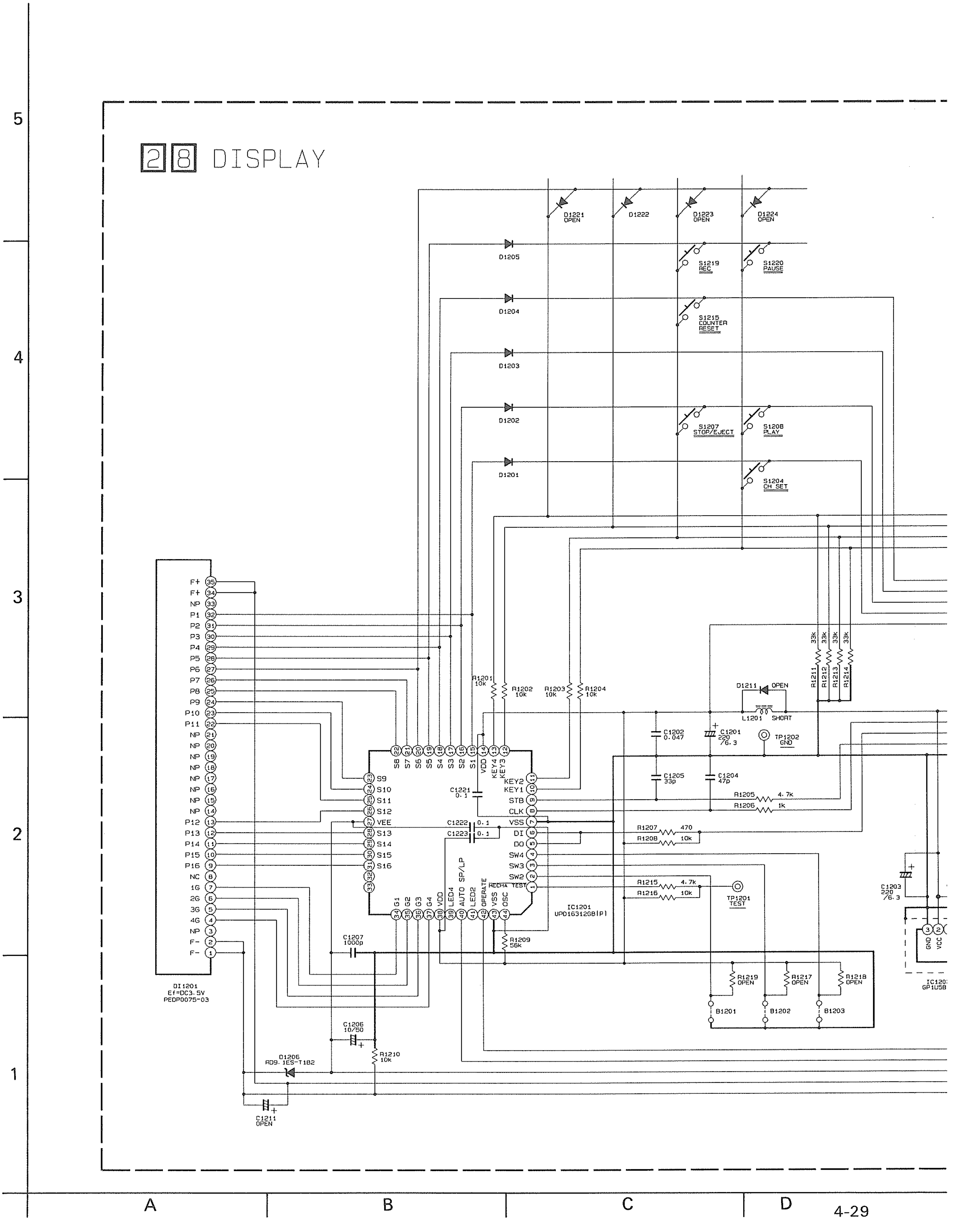
ATION		REF.No.	LOCATION		
R		RESISTOR			
D	2A	R1230	A	D	3A
D	2A	R1231	A	D	3B
OR		SWITCH			
D	1A	S1203	A	D	3B
D	2C	S1205	A	D	1A
		S1209	A	D	1B
D	3A	S1211	A	D	2B
D	3A	S1212	A	D	1A
D	3A				
D	2A				
D	2A				
D	2B				
D	2B				

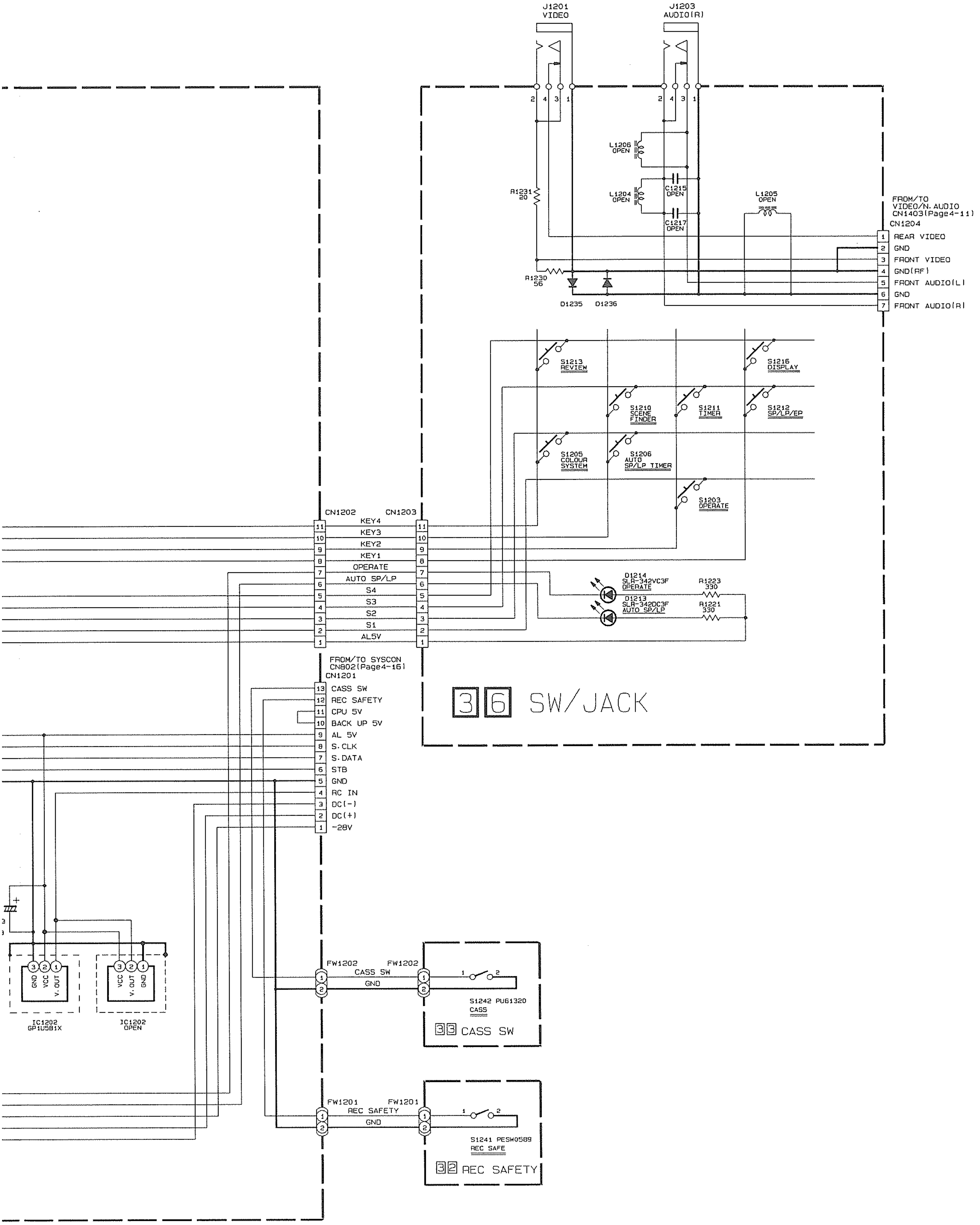

C
B
A
1
2
7
6
CN1204
S1209
INT.
PICTURE
/S.FINDER
S1211
TIMER
S1203
OPERATE
B1211
B1212
A
L1205
R1230
R1231
J1201
VIDEO
UL MARK
L1206
S1205
COLOR
SYSTEM
L1204
J1203
AUDIO
C1215
C1217
D1236
D1235
7
CN1203
1
S1212
SP/LP/EP
3 6 PB11033
SW/JACK PWB ASS'Y
1
2
3

ATION		REF.No.	LOCATION		
D	6A	S1207	A	D	2A
D	6A	S1208	A	D	1A
D	6A	S1213	A	D	10A
D	7A	S1219	A	D	3B
D	6A	S1220	A	D	3C
D	8A	S1242	A	D	4B
D	9A	TEST POINT			
D	5A	TP1201	A	D	9A
D	5A	TP1202	A	D	9A
D	5A	OTHERS			
D	5A				
D	8A	DI1201	A	D	7A
D	8A	FW1201	A	D	10B
D	8A	FW1202	A	D	3B
D	8A	FW1202	A	D	4B
D	8A				
D	4A				
D	4A				
D	4A				
D	4A				


W1207
W1286
W1285
R1205
R1206
C1204
C1205
W1254
IC1201
1
44
R1207
R1204
R1203
11
C1221
34
12
22
33
W1252
W1251
W1253
R1209
R1215
C1223
C1222
W1284
R1217
R1218
B1203
R1216
R1219
B1201
B1202
DI1201
C1206
C1207
C1203
R1210
D1206
TP1201
TEST
TP1202
GND
3
2
1
FW1201
S1213
REVIEW
CN1202
7
1
IC1202
D1202
D1203
R1201
R1202
R1208
32
36
6
25
22
7
23
13
10
5
4
8
2
1
9
10

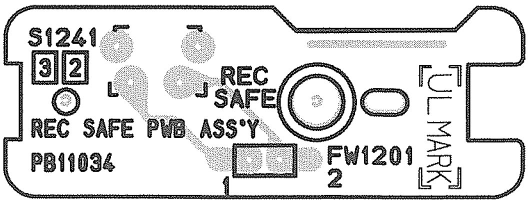
4.13 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW SCHEMATIC DIAGRAMS (for HR-E539


28 DISPLAY
5
4
3
2
1
A
B
C
D
D1221 OPEN
D1222
D1223 OPEN
D1224 OPEN
D1205
S1219 REC
S1220 PAUSE
D1204
S1215 COUNTER RESET
D1203
D1202
S1207 STOP/EJECT
S1208 PLAY
D1201
S1204 CH SET
F+ 35
F+ 34
NP 33
P1 32
P2 31
P3 30
P4 29
P5 28
P6 27
P7 26
P8 25
P9 24
P10 23
P11 22
NP 21
NP 20
NP 19
NP 18
NP 17
NP 16
NP 15
NP 14
P12 13
P13 12
P14 11
P15 10
P16 9
NC 8
1G 7
2G 6
3G 5
4G 4
NP 3
F- 2
F- 1
DI1201
Ef=DC3.5V
PEDP0075-03
S8 S7 S6 S5 S4 S3 S2 S1 VDD KEY4 KEY3
S9
S10
S11
S12
VEE
S13
S14
S15
S16
KEY2
KEY1
STB
CLK
VSS
DI
DO
SW4
SW3
SW2
MECHA TEST
G1 G2 G3 G4 VDD LED4 AUTO SP/LP LED2 OPERATE VSS OSC
IC1201
UPD16312GB(P)
R1201 10k
R1202 10k
R1203 10k
R1204 10k
C1221 0.1
C1222 0.1
C1223 0.1
C1207 1000p
R1209 56k
C1206 10/50
R1210 10k
D1206
RD9.1ES-T1B2
C1211 OPEN
33k 33k 33k 33k
R1211 R1212 R1213 R1214
D1211 OPEN
L1201 SHORT
C1202 0.047
C1201 220 /6.3
TP1202 GND
C1205 33p
C1204 47p
R1205 4.7k
R1206 1k
R1207 470
R1208 10k
R1215 4.7k
R1216 10k
TP1201 TEST
R1219 OPEN
R1217 OPEN
R1218 OPEN
B1201
B1202
B1203
C1203 220 /6.3
GND VCC
IC120
GP1U5B


J1201
VIDEO
J1203
AUDIO(R)
2 4 3 1
2 4 3 1
L1206
OPEN
L1204
OPEN
C1215
OPEN
C1217
OPEN
R1231
20
L1205
OPEN
R1230
56
D1235
D1236
FROM/TO
VIDEO/N. AUDIO
CN1403(Page4-11)
CN1204
1 REAR VIDEO
2 GND
3 FRONT VIDEO
4 GND(RF)
5 FRONT AUDIO(L)
6 GND
7 FRONT AUDIO(R)
S1213
REVIEW
S1216
DISPLAY
S1210
SCENE
FINDER
S1211
TIMER
S1212
SP/LP/EP
S1205
COLOUR
SYSTEM
S1206
AUTO
SP/LP TIMER
S1203
OPERATE
CN1202
CN1203
11 KEY4
10 KEY3
9 KEY2
8 KEY1
7 OPERATE
6 AUTO SP/LP
5 S4
4 S3
3 S2
2 S1
1 AL5V
D1214
SLR-342VC3F
OPERATE
D1213
SLR-342DC3F
AUTO SP/LP
R1223
330
R1221
330
FROM/TO SYSCON
CN802(Page4-16)
CN1201
13 CASS SW
12 REC SAFETY
11 CPU 5V
10 BACK UP 5V
9 AL 5V
8 S. CLK
7 S. DATA
6 STB
5 GND
4 RC IN
3 DC(-)
2 DC(+)
1 -28V
36 SW/JACK
3 2 1
GND
VCC
V. OUT
VCC
V. OUT
GND
IC1202
GP1U581X
IC1202
OPEN
FW1202
FW1202
CASS SW
GND
1 2
S1242 PU61320
CASS
33 CASS SW
FW1201
FW1201
REC SAFETY
GND
S1241 PESW0589
REC SAFE
32 REC SAFETY

4.14 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW CIRCUIT BOARDS (for HR-E539EE)

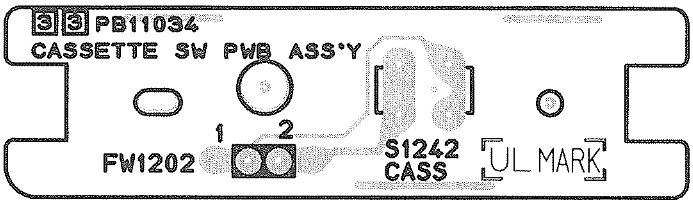
-REC SAFETY-


S1241
3 2
REC
SAFE
REC SAFE PWB ASS'Y
PB11034
FW1201
1
2
UL MARK

COMPONENT

REF.No.	LOC
CAPACITO	
C1215	A
C1217	A
CONNECT	
CN1203	A
CN1204	A
DIODE	
D1213	A
D1214	A
D1235	A
D1236	A
COIL	
L1204	A
L1205	A
L1206	A

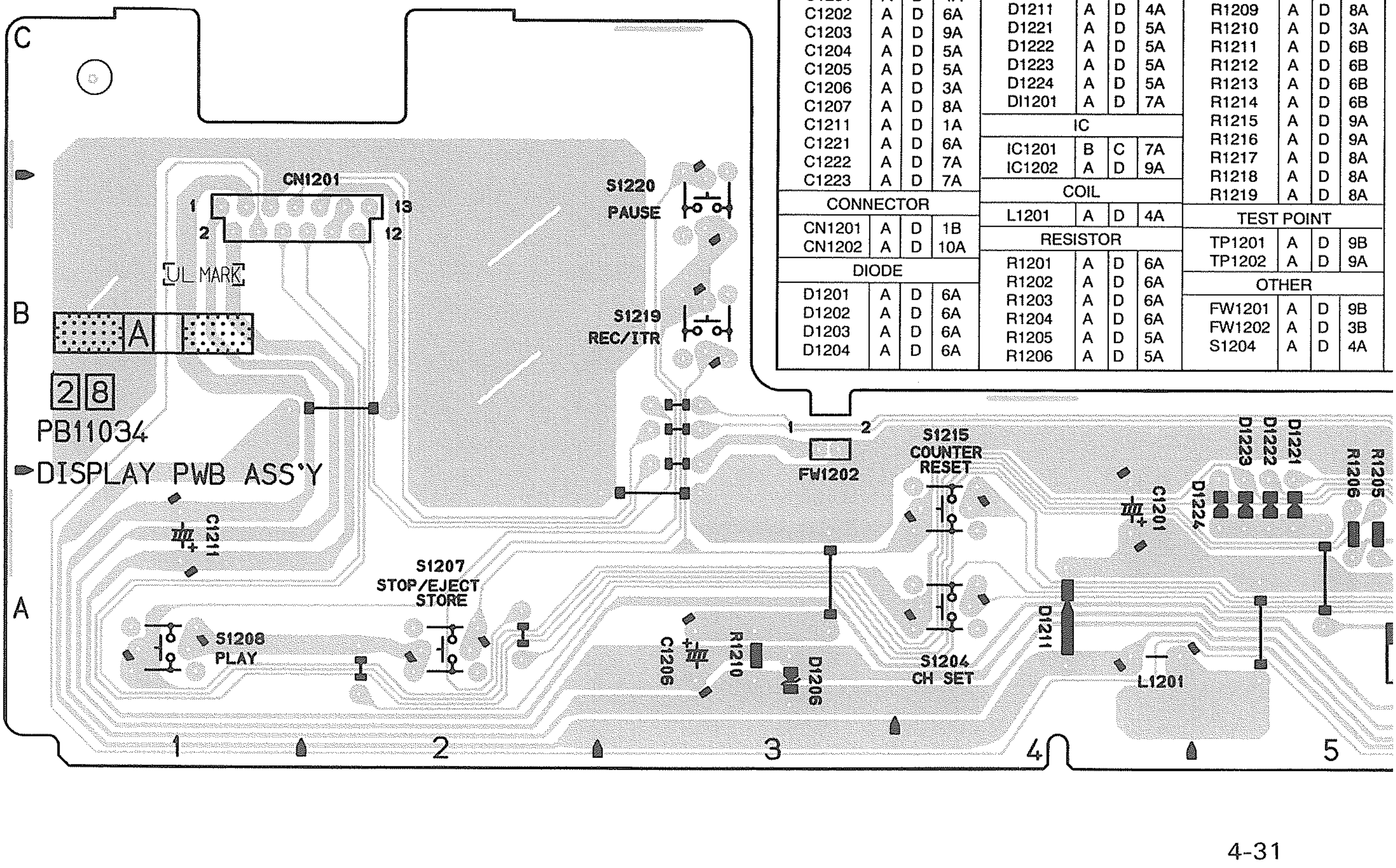
-CASSETTE SW-


3 3 PB11034
CASSETTE SW PWB ASS'Y
FW1202
1
2
S1242
CASS
UL MARK

-DISPLAY-

COMPONENT PARTS LOCATION GUIDE <DISPLAY PWB>

REF.No.	LOCATION		
CAPACITOR			
C1201	A	D	4A
C1202	A	D	6A
C1203	A	D	9A
C1204	A	D	5A
C1205	A	D	5A
C1206	A	D	3A
C1207	A	D	8A
C1211	A	D	1A
C1221	A	D	6A
C1222	A	D	7A
C1223	A	D	7A
CONNECTOR			
CN1201	A	D	1B
CN1202	A	D	10A
DIODE			
D1201	A	D	6A
D1202	A	D	6A
D1203	A	D	6A
D1204	A	D	6A
D1205	A	D	6A
D1206	A	D	3A
D1211	A	D	4A
D1221	A	D	5A
D1222	A	D	5A
D1223	A	D	5A
D1224	A	D	5A
DI1201	A	D	7A
IC			
IC1201	B	C	7A
IC1202	A	D	9A
COIL			
L1201	A	D	4A
RESISTOR			
R1201	A	D	6A
R1202	A	D	6A
R1203	A	D	6A
R1204	A	D	6A
R1205	A	D	5A
R1206	A	D	5A
R1207	A	D	6B
R1208	A	D	6A
R1209	A	D	8A
R1210	A	D	3A
R1211	A	D	6B
R1212	A	D	6B
R1213	A	D	6B
R1214	A	D	6B
R1215	A	D	9A
R1216	A	D	9A
R1217	A	D	8A
R1218	A	D	8A
R1219	A	D	8A
TEST POINT			
TP1201	A	D	9B
TP1202	A	D	9A
OTHER			
FW1201	A	D	9B
FW1202	A	D	3B
S1204	A	D	4A

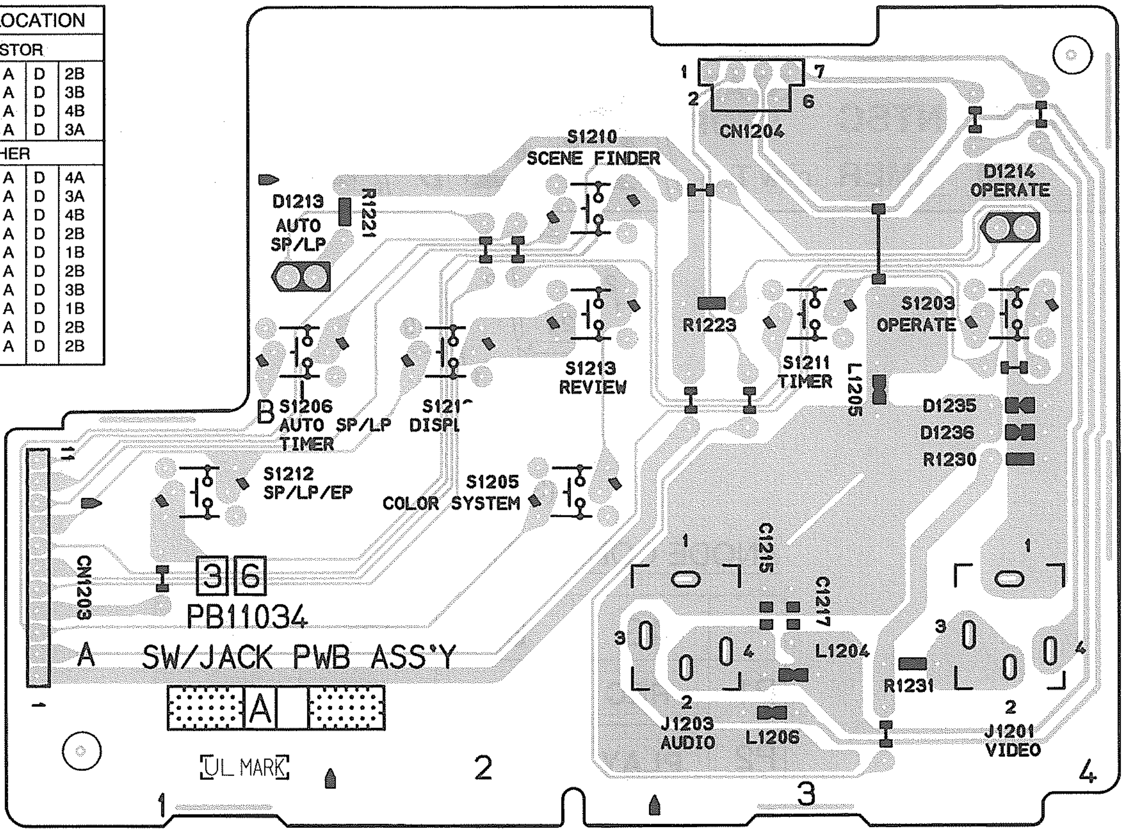

C
B
A
CN1201
1
2
13
12
UL MARK
A
2 8
PB11034
DISPLAY PWB ASS'Y
S1220
PAUSE
S1219
REC/ITR
FW1202
1
2
S1215
COUNTER
RESET
C1211
S1207
STOP/EJECT
STORE
S1208
PLAY
C1206
R1210
D1206
S1204
CH SET
D1211
C1201
D1224
D1223
D1222
D1221
R1206
R1205
L1201
1
2
3
4
5

E)

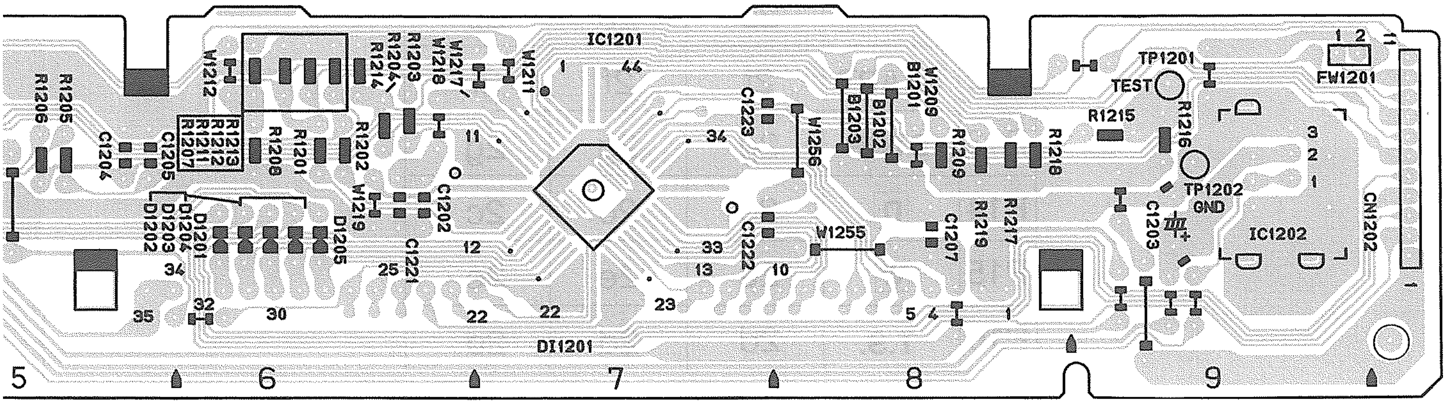
-SW/JACK-

ONENT PARTS LOCATION GUIDE < SW/JACK PWB >

No.	LOCATION			REF.No.	LOCATION		
CAPACITOR				RESISTOR			
15	A	D	3A	R1221	A	D	2B
17	A	D	3A	R1223	A	D	3B
ONNECTOR				R1230	A	D	4B
1203	A	D	1A	R1231	A	D	3A
1204	A	D	3C	OTHER			
DIODE				J1201	A	D	4A
13	A	D	1B	J1203	A	D	3A
14	A	D	4B	S1203	A	D	4B
35	A	D	4B	S1205	A	D	2B
36	A	D	4B	S1206	A	D	1B
COIL				S1210	A	D	2B
04	A	D	3A	S1211	A	D	3B
05	A	D	3B	S1212	A	D	1B
06	A	D	3A	S1213	A	D	2B
				S1216	A	D	2B

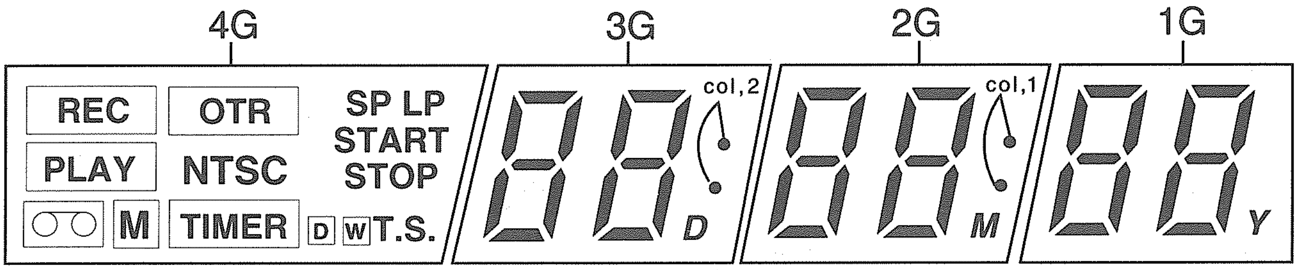

1
7
2
6
CN1204
S1210
SCENE FINDER
D1214
OPERATE
D1213
AUTO
SP/LP
R1221
R1223
S1203
OPERATE
S1213
REVIEW
S1211
TIMER
L1205
B
S1206
AUTO SP/LP
TIMER
S121
DISPL
D1235
D1236
R1230
11
S1212
SP/LP/EP
S1205
COLOR SYSTEM
C1215
C1217
CN1203
3
6
PB11034
A
SW/JACK PWB ASS'Y
L1204
R1231
1
A
J1203
AUDIO
L1206
J1201
VIDEO
UL MARK
1
2
3
4

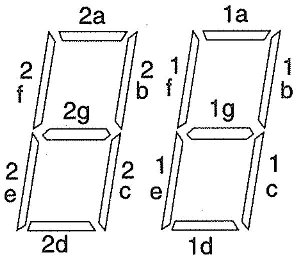
ATION		REF.No.	LOCATION		
D	6B	S1207	A	D	2A
D	6A	S1208	A	D	1A
D	8A	S1215	A	D	4A
D	3A	S1219	A	D	3B
D	6B	S1220	A	D	3B
D	6B				
D	6B				
D	6B				
D	9A				
D	9A				
D	8A				
D	8A				
D	8A				
NT					
D	9B				
D	9A				
D	9B				
D	3B				
D	4A				


R1205
R1206
W1212
R1213
R1212
R1211
R1207
C1204
C1205
R1208
R1201
R1203
R1204
R1214
W1217
W1218
R1202
W1211
IC1201
1
44
11
W1219
C1202
C1221
D1201
D1204
D1203
D1202
D1205
34
35
32
30
12
25
22
22
DI1201
7
C1223
34
W1256
33
13
C1222
10
W1255
23
B1203
B1202
B1201
W1209
R1209
R1219
C1207
R1217
R1218
5
4
1
TP1201
TEST
R1215
R1216
FW1201
TP1202
GND
C1203
IC1202
CN1202
3
2
1
5
6
8
9

4.15 FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT


4G
3G
2G
1G
REC
OTR
SP LP
START
STOP
PLAY
NTSC
M
TIMER
D
W
T.S.
col,2
D
col,1
M
Y


2a
1a
2 f
2 b
1 f
1 b
2g
1g
2 e
2 c
1 e
1 c
2d
1d

(3G～1G)

ANODE CONNECTION

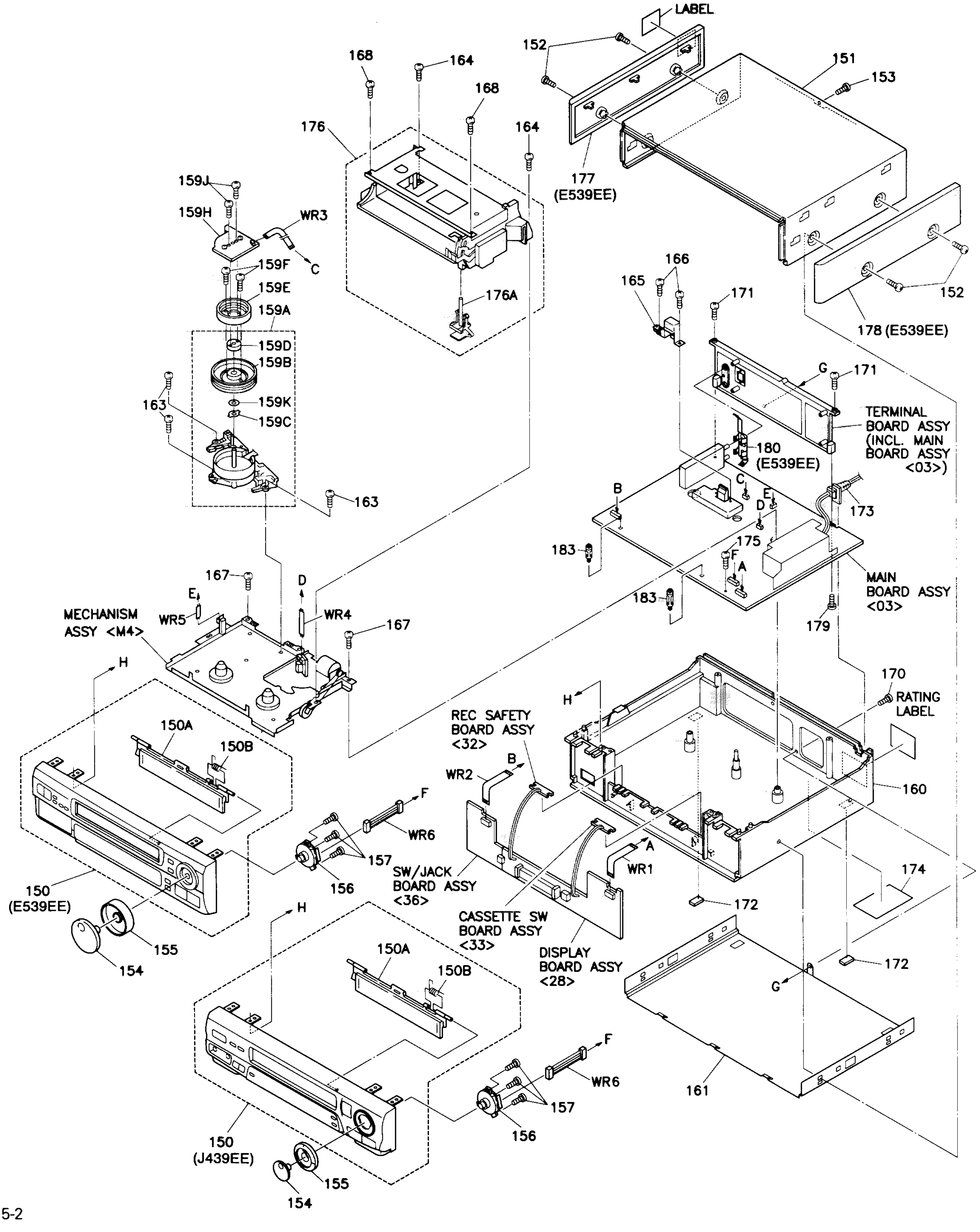
	4G	3G	2G	1G
P1	REC	1a	1a	1a
P2	PLAY	1b	1b	1b
P3	○○	1f	1f	1f
P4	M	1g	1g	1g
P5	OTR	1c	1c	1c
P6	NTSC	1e	1e	1e
P7	TIMER	1d	1d	1d
P8	—	col2	col1	—
P9	—	D	M	Y
P10	SP	2a	2a	2a
P11	LP	2b	2b	2b
P12	START	2f	2f	2f
P13	STOP	2g	2g	2g
P14	D	2c	2c	2c
P15	W	2e	2e	2e
P16	T.S.	2d	2d	2d

SECTION 5
PARTS LIST

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.


CAUTION LABEL
152
151
153
168
164
168
176
164
177
(E539EE)
159J
159H
WR3
C
159F
159E
159A
159D
159B
159K
159C
163
163
176A
166
165
171
152
178 (E539EE)
G
171
TERMINAL BOARD ASSY (INCL. MAIN BOARD ASSY <03>)
180
(E539EE)
B
C
E
D
173
183
175
F
A
MAIN BOARD ASSY <03>
183
179
167
E
D
WR5
WR4
MECHANISM ASSY <M4>
167
H
170
RATING LABEL
H
REC SAFETY BOARD ASSY <32>
150A
150B
B
WR2
160
F
WR6
157
A
WR1
SW/JACK BOARD ASSY <36>
156
150
(E539EE)
174
CASSETTE SW BOARD ASSY <33>
172
H
155
154
DISPLAY BOARD ASSY <28>
150A
172
150B
G
F
WR6
161
157
156
150
(J439EE)
155
154

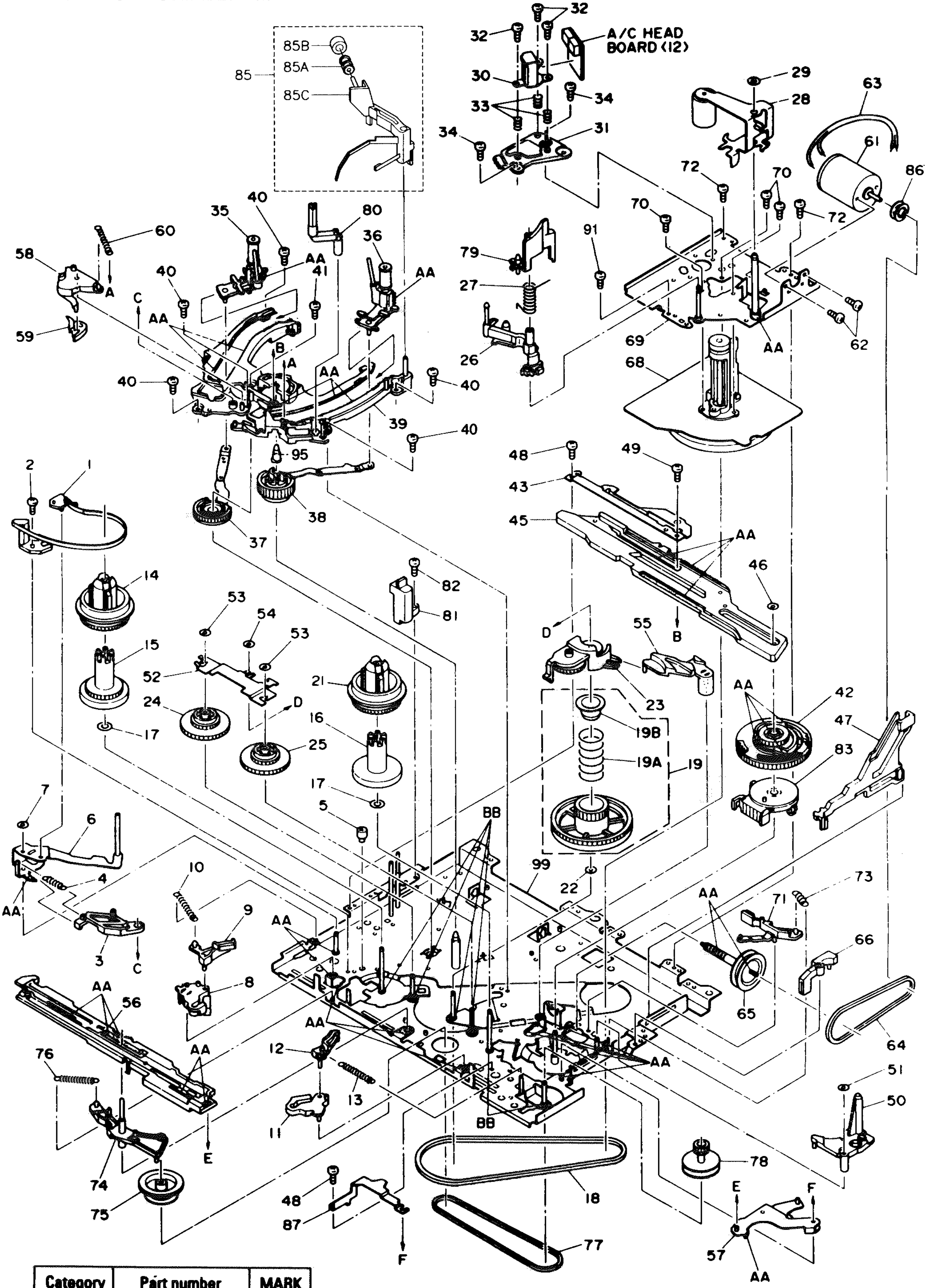
#⚠ REF No. PART No. PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

	150	PQ11802AQ	FRONT PANEL ASSEMBLY,E539EE
		PQ11906W	FRONT PANEL ASSEMBLY,J439EE
	150A	PQ21818-30	CASSETTE DOOR,E539EE
		PQ21915-16	CASSETTE DOOR,J439EE
	150B	PQ46448	TORSION SPRING
⚠	151	PQ11676-7	TOP COVER,J439EE
		PQ11676-31	TOP COVER,E539EE
	152	PQ43930	SPECIAL SCREW,X4,E539EE
		SDSF3010M	SCREW,X4 TOP COVER,J439EE
	153	SDSF3010M	SCREW
	154	PQ35247-5	KNOB(JOG),E539EE
		PQ35472	KNOB(JOG),J439EE
	155	PQ35295-5	KNOB(SHUTTLE),E539EE
		PQ35271	KNOB(SHUTTLE),J439EE
	156	PEME0757-03	JOG SHUTTLE ASSEMBLY
	157	SDSF2608Z	SCREW,X3 JOG
	159A	PDM2282K	DRUM SUB ASSEMBLY
	159B	PDM3403K	UPPER DRUM ASSEMBLY
	159C	PDM4440A	BRUSH ASSEMBLY
	159D	PDM4345A	COLLAR ASSEMBLY
	159E	PDZ0141-2	ROTOR ASSEMBLY
	159F	SPSH2660Z	SCREW,X2
⚠	159H	PDZ0141-1-2	STATOR ASSEMBLY
	159J	SPSP2606Z	SCREW,X2
	159K	PDM4050-10	WASHER
⚠	160	PQ11666-3-14	BOTTOM CHASSIS
⚠	161	PQ11668-2	BOTTOM COVER
	163	SPST2608Z	SCREW,X3 DRUM
	164	SPST2606Z	SCREW,X2 CASS HOUS ASSY
	165	PQ35385-1-1	SHIELD COVER,PRE/REC
	166	SDST2606Z	SCREW,X2 PRE/REC
	167	SDSF4012Z	SCREW,X2 MECH
	168	SDSF3010Z	SCREW,X2 CASS HOUS ASSY
	170	SDSF3010M	SCREW,TERMINAL
	171	SDSF3010Z	SCREW,X2 TERMINAL
	172	PQ43013-3	FOOT,X2
⚠	173	QMP4A10-170	POWER CORD
⚠	174	PQ46485	SPACER(SAFETY),BOTTOM CHASSIS
	175	SDSF3010Z	SCREW,MAIN BOARD
	176	PUS29724B-1	CASSETTE HOUSING ASSEMBLY
	176A	PQ46359	CASSETTE SWITCH PIN
	177	PQ11842	SIDE PANEL(L),E539EE
	178	PQ11843	SIDE PANEL(R),E539EE
	179	SDSF3008Z	SCREW,MAIN
	180	PQ21623-1-2	EARTH PLATE(RF),TUNER,E539EE
	183	PEME0947-01-01	SPACER,X2 MECHA
	WR1	PW30802-1314	WIRE, DISPLAY/SWITCH
	WR2	PW30802-0714	WIRE, SW/JACK
	WR3	PW30803-0414	WIRE, DRUM
	WR4	PW30101-C0HH887	WIRE, A/C HEAD
	WR5	PW30701-32AAYY	WIRE, FE HEAD
	WR6	PW30218-0831613	WIRE, JOG

5.3 MECHANISM ASSEMBLY <M4>



32
32
A/C HEAD BOARD (12)
30
29
63
28
33
34
31
34
85
85B
85A
85C
72
70
61
86
70
72
40
80
35
36
60
58
AA
40
41
AA
C
AA
91
79
27
62
69
AA
26
68
A
B
A
AA
40
40
59
39
40
40
2
1
95
48
49
43
38
37
45
AA
14
82
81
46
53
54
53
D
55
B
15
52
21
23
24
D
19B
42
17
16
AA
25
19A
19
47
17
83
7
5
6
BB
99
4
10
22
73
AA
AA
AA
71
9
3
C
AA
66
AA
8
56
65
AA
64
76
AA
12
AA
13
51
11
BB
50
E
78
74
48
18
E
F
75
87
77
57
F
AA

Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

****

MECHANISM ASSEMBLY <M4>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ46298A-5	TENSION BAND ASSEMBLY
	2	SDST2608Z	SCREW
	3	PQ35012-1-5	TENSION ARM LEVER
	4	PQM30001-385109	TENSION SPRING
	5	PQ46302-1-3	ADJUST PIN
	6	PQ46303B-8	TENSION ARM ASSEMBLY
	7	PQM30017-47	SLIT WASHER
	8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
	9	PQ46306A-3	SUB BRAKE ASSEMBLY (SUPPLY)
	10	PQM30001-393	TENSION SPRING
	11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
	12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
	13	PQM30001-389102	TENSION SPRING
	14	PQ46535A-2	REEL DISK ASSEMBLY(SUPPLY)
	15	PQ35014-1-1	SLIT DISK (SUPPLY)
	16	PQ35015-1-1	SLIT DISK (TAKE UP)
	17	PQM30018-69	SPACER,X2
	18	PQM30003-38	BELT(CAPSTAN)
	19	PQ46497B-2	PULLEY ASSEMBLY
	19A	PQM30002-233	COMPRESION SPRING
	19B	PQ46311	SPRING CAP
	21	PQ46498A-3	REEL ASSEMBLY (TAKE UP)
	22	PQM30018-69	SPACER
	23	PQ46312B-9	IDLER ARM ASSEMBLY
	24	PQ46316A-4	CLUTCH UNIT (SUPPLY)
	25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
	26	PQ46325B-9	GUIDE ARM ASSEMBLY
	27	PQ46326-2	TORSION SPRING
	28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
	29	PQM30017-24	SLIT WASHER,P LEVER
	30	PEHE0182	AUDIO CONTROL HEAD
	31	PQ35206-1-3	HEAD BASE
	32	PQ43687A	SCREW,X3
	33	PQM30002-192	COMPRESSION SPRING,X3
	34	SDSP2604Z	SCREW,X2
	35	PQ46595A-5	POLE BASE ASSEMBLY (SUPPLY)
	36	PQ46597A	POLE BASE ASSEMBLY (TAKE UP)
	37	PQ46332A-3	LOADING ARM ASSEMBLY (SUPPLY)
	38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
	39	PQ11657-1-9	GUIDE RAIL
	40	SPST2608Z	SCREW,X5
	41	SDST2612Z	SCREW
	42	PQ21684-1-3	CONTROL CAM
	43	PQ35138-1-2	CONTROL BRACKET
	45	PQ11658-1-15	CONTROL PLATE
	46	PQM30017-8	SLIT WASHER
	47	PQ21685-2-9	PINCH PLATE
	48	SPST2606Z	SCREW,X2
	49	SPSF2608M	SCREW
	50	PQ46342B-10	LEVER ASSEMBLY
	51	PQM30017-8	SLIT WASHER
	52	PQ35083-1-8	REEL BRACKET
	53	PQM30017-51	SLIT WASHER,X2
	54	Q03093-830	WASHER
	55	PQ35026-1-7	IDLER LEVER
	56	PQ11659-1-12	SLIDE PLATE
	57	PQ46344A-2	CHANGE LEVER ASSEMBLY
	58	PQ21686-1-3	TAKE UP LEVER
	59	PQ46345-1-2	TAKE UP HEAD
	60	PQM30001-387106	TENSION SPRING
⚠	61	PU60628-3-2	LOADING MOTOR
	62	SPSP3003Z	SCREW,X2
	63	PW30101-80AJ632	WIRE
	64	PQM30003-39	BELT
	65	PQ46395B	WORM GEAR ASSEMBLY
	66	PQ21699-1-2	WORM BEARING
⚠	68	PU61487-2-3	CAPSTAN MOTOR
	69	PQ46347F-16	SUB DECK ASSEMBLY
	70	SPSG2608Z	SCREW,X3
	71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
	72	SPST2606Z	SCREW,X2
	73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
	74	PQ46353A-2	CHANGE ARM ASSEMBLY
	75	PQ46354	CHANGE GEAR
	76	PQM30001-386	TENSION SPRING
	77	PQM30003-40	BELT
	78	PQ46355	CASSETTE GEAR
	79	PQ35030-1-5	LID GUIDE
	80	PQ21689-2	LED PRISM
	81	PEHE0237	FULL ERASE HEAD
	82	SDST2610Z	SCREW
	83	PU61432-1-1	ROTARY ENCODER
	85	PQ46436A-1	CLEANER ASSEMBLY
	85A	PQ46418-1-2	CLEANER ROLLER
	85B	PQ46419-1-2	CLEANER
	85C	PQ35159-1-1	CLEANER ARM
	86	PQ43546-1-2	MOTOR PULLEY
	87	PQ35217-1-2	CONTROL BRACKET 2
	91	SDSP2604Z	SCREW
	95	PQ46767	GUIDE CAP
	99	PQ21680H	MAIN DECK ASSEMBLY

JVC

VICTOR COMPANY OF JAPAN, LIMITED

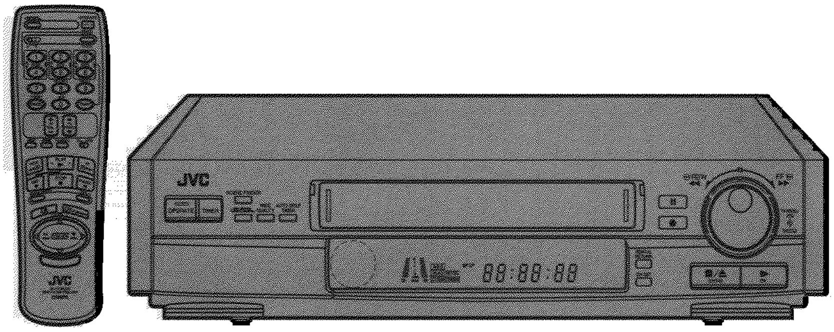
Printed in Japan
9611 (VP-V09C2/C3)

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-E639EE



Hi-Fi

VHS
PAL NTSC

SPECIFICATIONS

GENERAL

Power requirement	
Rating	: AC 110 – 240 V∿, 50/60 Hz
Operating	: AC 90 – 260 V∿, 50/60 Hz
Power consumption	: 24 W (E639EE) 20 W (E539EE)
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 426 x 94 x 341 mm
Weight	: 4.5 kg
Format	: VHS standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM) : 160 min. with T-160 video cassette (NTSC)
(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal,625 lines 50 fields : NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines (PAL/MESECAM) : 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)[E639EE only]
Input/Output	: RCA connectors (IN x 2, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 48 positions (+AUX position "AU")
Tuning system	: Voltage synthesized tuner
Channel coverage	: VHF (Low) 42 – 153MHz (High)153 – 470MHz UHF 470 – 870MHz
Aerial output	: UHF channels (Adjustable E32 – E40)
Memory backup time	: Approx. 18 hours.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6/UM-3" battery x 2

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 82567
November 1996

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Important Safety Precautions

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

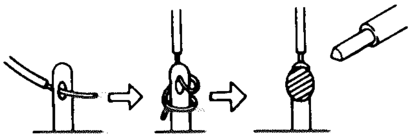

Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

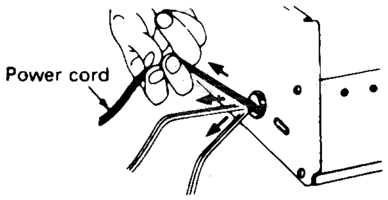

Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

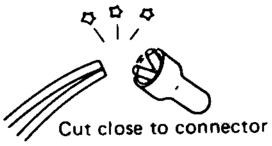

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

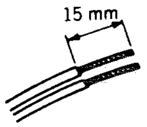

Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

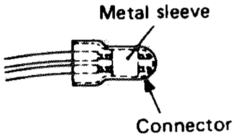

Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

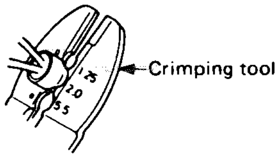

Fig. 6

(5) Check the four points noted in Fig. 7.

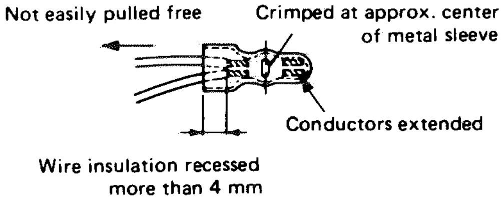
Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

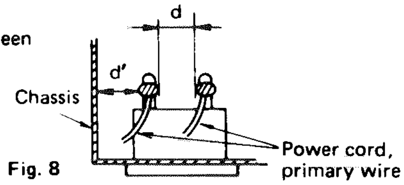

Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

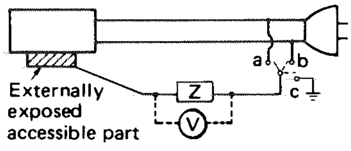

Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

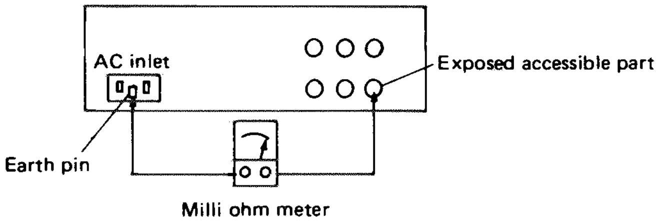

Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

ATTENTION

1. This recorder can also receive SECAM colour television signals for recording and playback.
2. Recordings made of SECAM television signals produce monochrome pictures if played back on another video recorder of SECAM standard, or do not produce normal colour pictures if played back on another video recorder of PAL standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.

POWER SYSTEM
This set operates on voltage of AC110 – 240V∿ (Rating), AC90 – 260 V∿ (Operating), 50/60 Hz with automatic switching.

IMPORTANT

- Please read the various precautions on this page and page 33 before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

- Only cassettes marked "VHS" can be used with this videorecorder.
- HQ VHS is compatible with existing VHS equipment.

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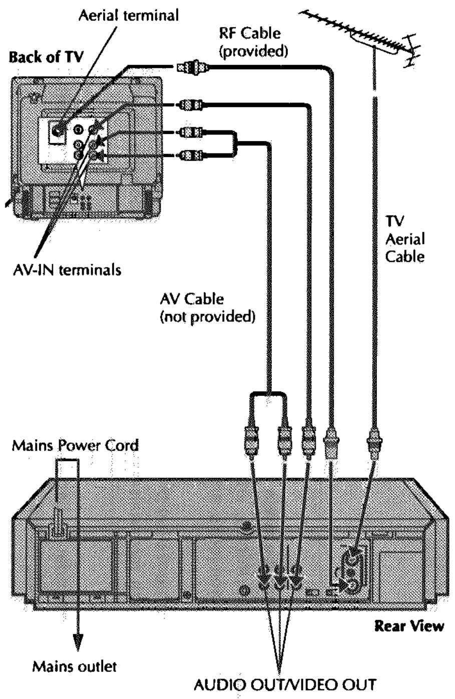
Basic Connections



For HR-E539EE Owners:
If your TV has AUDIO IN L and R connectors, connect the recorder to the L connector.

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

1 CHECK CONTENTS

Make sure the package contains all of the accessories listed in "Specifications" (☞ pg. 33).

2 SITUATE RECORDER

Place the recorder on a stable, horizontal surface.

3 CONNECT RECORDER TO TV

The connection method you use depends on the type of TV you have.

RF CONNECTION
- *To Connect To A TV With NO AV Input Terminals . . .*
  a- Disconnect the TV aerial cable from the TV.
  b- Connect the TV aerial cable to the ANT. IN jack on the rear panel of the recorder.
  c- Connect the provided RF cable between the RF OUT jack on the rear panel of the recorder and the TV's aerial terminal.

AV CONNECTION
- *To Connect To A TV With AV Input Terminals . . .*
  a- Connect the aerial, recorder and TV as per "RF CONNECTION".
  b- Connect an optional AV cable between the AUDIO OUT and VIDEO OUT connectors on the rear panel of the recorder and the TV's AV-IN terminals .

4 CONNECT RECORDER TO MAINS

Plug the end of the mains power cord into a mains outlet.

Select Television System

Major countries	Colour TV broadcast system	Switch position
China, Mongolia, Rumania	PAL D/K	K
Bulgaria, Czech Rep., Slovakia, Hungary, Poland, Russia	SECAM D/K	
Austria, Denmark, Finland, Holland, Italy, Norway, Spain, Switzerland, Sweden, Germany	PAL B/G	G
Egypt	SECAM B/G	

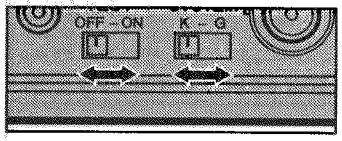
1 SET SYSTEM SWITCH

Set to the appropriate position depending on your TV system. (Refer to the chart on the left.)

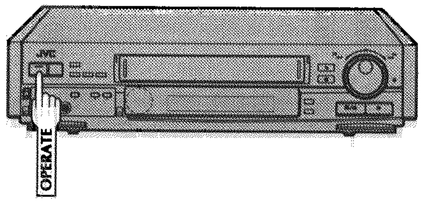
NOTES:

- *If no colours appear on the screen when using a multi-system television with its system select switch set to AUTO, change the switch position to correspond to the recorder's RF system select switch (G or K).*
- *For more information on multi-system compatibility.* ☞ *p.24*

Back of recorder



Tune The TV To Your Video Recorder



The video recorder sends picture and sound signals via the RF connecting cable to your TV on UHF channel 36.

1 TURN ON THE RECORDER

Press **OPERATE**.

2 SELECT OUTPUT MODE

Set the **TEST** switch on the back of the recorder to ON.

3 SET TV CHANNEL

Set your TV to the video channel (UHF channel 36). Two white bars appear on screen vertically.

- Tune the TV until the bars are as clear as they can be.
- Your TV should be set to the channel designated for use with a video recorder, or to a spare channel if there is not a specified video channel on your TV.

4 RESET OUTPUT MODE

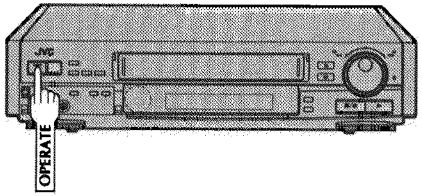
Return the **TEST** switch to OFF.

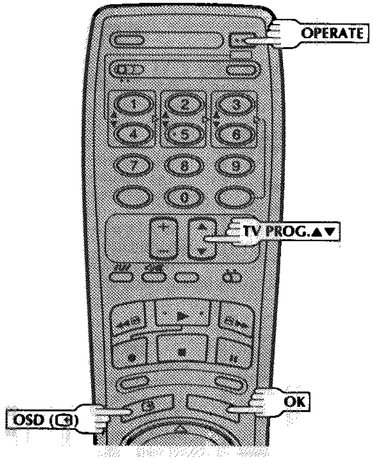
NOTES:

- *If CH36 is occupied by a local station, adjust the RF output channel adjustment screw to use another channel between CH32 and CH40 instead.*
- *If some interference noise is continually seen on the screen, consult your JVC dealer.*

On-Screen Displays

Turn on the TV and select the VIDEO channel (or AV mode).





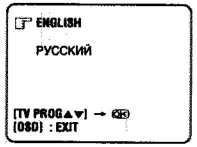
You can choose whether or not to have various operational indicators appear on screen, by setting this function ON or OFF. Messages appear in the language you select.
Use the buttons on the remote control for this procedure.

1 TURN ON THE RECORDER

Press **OPERATE**.

2 SELECT LANGUAGE

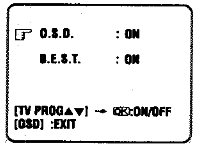
Press **OSD**(⊡). The Language screen appears. Place the pointer next to the language of your choice by pressing **TV PROG.▲/▼**, then press **OK** to enter your selection.



☞ ENGLISH
РУССКИЙ
[TV PROG▲▼] → OK
[OSD] : EXIT

3 SELECT MODE

The pointer should already be next to "O.S.D.". If not, press **TV PROG.▲/▼** to place it there.



☞ O.S.D. : ON
B.E.S.T. : ON
[TV PROG▲▼] → OK:ON/OFF
[OSD] :EXIT

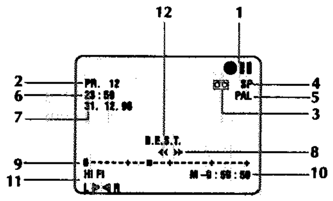
4 ENABLE/DISABLE ON-SCREEN DISPLAY

The default setting is "ON", so if you want on-screen displays, leave the setting as is and go to step **5**. If you don't want the displays to appear, press **OK** to set "O.S.D." to "OFF".

5 CLOSE MODE SELECT SCREEN

Press **OSD** (⊡).

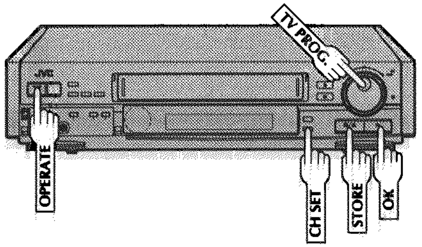
The superimposed indication on the TV screen tells you what the recorder is doing.

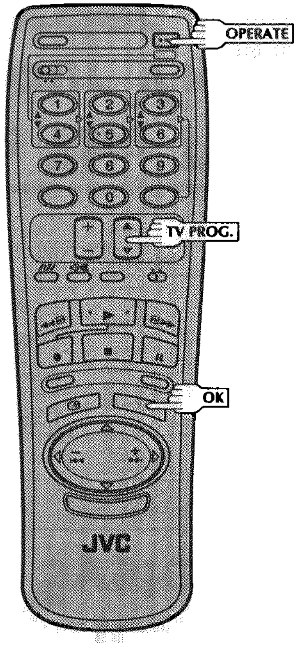


1– Operation mode indicators
2– Channel position number/Aux. indicator (AUX)
3– Cassette loaded mark
4– Tape speed SP/LP/EP
5– Colour System indicator (☞ pg. 24)
6– Clock display
7– Current day/month/year
8– Tape direction
9– Tape position indicator (☞ pg. 14)
10– Counter display (including Counter Memory indicator)
11– Audio mode display [E639EE only]
12– B.E.S.T. Picture System indicator

Tuner Set

- Turn on the TV and select the VIDEO channel (or AV mode).
- Be sure to select the AUTO mode by pressing the **COLOUR SYSTEM** button. (☞ pg. 24)





Your recorder needs to memorise all necessary stations in channel positions in order to record TV programmes. Once stored, you can call them up with the **TV PROG.** buttons without going through any vacant channels.

1 TURN ON THE RECORDER

Press **OPERATE**.

2 ACCESS CHANNEL SET MODE SELECT SCREEN

Press and hold **CH SET** for more than 2 seconds. The Channel Set Mode Select screen appears.

3 SELECT MODE

Turn the **TV PROG.** dial to place the pointer next to "SEARCH/STORE", then press **OK**. The Band Select screen appears.

```
☞ SEARCH/STORE
  DELETE
  FINE TUNING

[TV PROG▲▼] → OK
[CANCEL] :EXIT
```

4 SELECT BAND

Turn the **TV PROG.** dial to place the pointer next to the band of your choice, then press **OK** to initiate Auto Channel Search.

```
BAND SELECT
☞ VHF L
  VHF H
  UHF

[TV PROG▲▼] → OK
[CH SET] :EXIT
```

```
AUTO SEARCH PROCEEDING
PLEASE WAIT
VHF L 00
[CH SET] :EXIT
```

5 SET DESIRED CHANNEL

The following screen appears when a station is detected. To store the detected station, place the pointer next to "STORE" by turning the **TV PROG.** dial, then press **OK**.
If you don't want to store the station, turn the **TV PROG.** dial to place the pointer next to "CONTINUE", then press **OK**. Auto Channel Search will start resume.

```
☞ STORE
  CONTINUE

[TV PROG▲▼] → OK
[CH SET] :EXIT
```

- The blueback screen and the TV picture currently being broadcast appear alternately for 8 seconds each.

6 SELECT POSITION

Turn the **TV PROG.** dial until an open position in which you want to store a channel appears, then press **OK**.

```
SELECT NUMBER
TV PROG.   1

[TV PROG▲▼] → OK
[CH SET] :EXIT
```

7 STORE CHANNEL

If fine tuning is not necessary, simply press **STORE**. For fine tuning adjustment, turn the **TV PROG.** dial until the picture becomes clearer, then press **STORE**.

```
TV PROG.   1

[STORE] :STORE
[TV PROG▲] :FINE TUNING +
[TV PROG▼] :FINE TUNING –
[CH SET] :EXIT
```

- To continue Auto Channel Search, turn the **TV PROG.** dial to select "CONTINUE", then press **OK**. Repeat steps **5** – **7** as necessary.
- To set channels for other bands, turn the **TV PROG.** dial to select "BAND SELECT", then press **OK** to go back to the Band Select screen. Repeat steps **4** – **7**.

```
TV PROG.   1  ADDED
☞ CONTINUE
  BAND SELECT

[TV PROG▲▼] → OK
[CH SET] :EXIT
```

8 RETURN TO NORMAL SCREEN

Press **CH SET**.

NOTES:
- *You can also use the **TV PROG. ▲/▼** button on the remote control instead of the **TV PROG.** dial.*
- *You can also use the **SHUTTLE** ring on the recorder instead of the **OK** button.*

Delete A Stored Channel

1 TURN ON THE RECORDER

Press **OPERATE**.

2 ACCESS CHANNEL SET MODE SELECT SCREEN

Press and hold **CH SET** for more than 2 seconds. The Channel Set Mode Select screen appears.

3 SELECT MODE

Turn the **TV PROG.** dial to place the pointer next to "DELETE", then press **OK**.

4 SELECT CHANNEL

Turn the **TV PROG.** dial until the position number of the channel you wish to delete appears.

- If the on-screen display is hard to read, refer to the recorder's display panel.

```
SELECT NUMBER
TV PROG.   1

[TV PROG▲▼] → OK
[CH SET] :EXIT
```

5 DELETE CHANNEL

Press **OK** twice.
The screen shows the selected channel has been deleted.

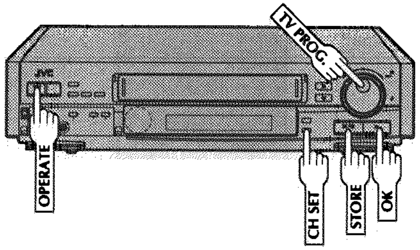
- To delete another channel, press **OK** again, then repeat steps **4** – **5**.

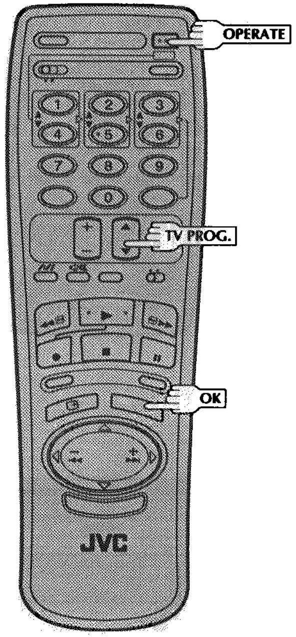
```
TV PROG.   1 DELETED

OK :CONTINUE
[CH SET] :EXIT
```

6 RETURN TO NORMAL SCREEN

Press **CH SET**.

NOTE:
*If you skipped a channel by mistake, perform steps **1** – **8** on pages 6 and 7 to re-store it.*





Fine-Tuning Channels Already Stored

1 TURN ON THE RECORDER

Press **OPERATE**.

2 ACCESS CHANNEL SET MODE SELECT SCREEN

Press and hold **CH SET** for more than 2 seconds. The Channel Set Mode Select screen appears.

3 SELECT MODE

Turn the **TV PROG.** dial to place the pointer next to "FINE TUNING", then press **OK**.

4 SELECT CHANNEL

Turn the **TV PROG.** dial so that the position number of the channel you want to fine-tune appears, then press **OK**.

```
        SELECT NUMBER

       TV PROG.    1



[TV PROG▲▼] → OK
[CH SET] :EXIT
```

5 PERFORM TUNING

Turn the **TV PROG.** dial until the picture becomes clearer, then press **STORE**.

- To fine-tune another channel, press **OK** and repeat steps **4** – **5**.

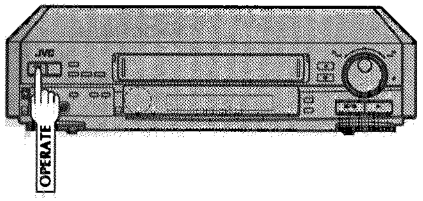
```
       TV PROG.    1

[STORE] :STORE
[TV PROG▲] :FINE TUNING +
[TV PROG▼] :FINE TUNING –
[CH SET] :EXIT
```

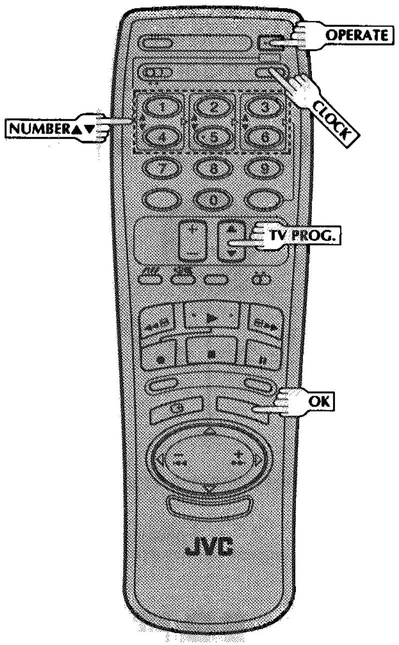
6 RETURN TO NORMAL SCREEN

Press **CH SET**.

Clock Set

Turn on the TV and select the VIDEO channel (or AV mode).





Use the buttons on the remote control for this procedure.

1 TURN ON THE RECORDER

Press **OPERATE**.

2 ACCESS MODE SELECT SCREEN

Press **CLOCK**.

3 SELECT MODE

Press **TV PROG.▲/▼** to place the pointer next to "CLOCK SET", then press **OK**. The Clock Set screen appears.

```
     TIMER PROGRAMMING

☞ CLOCK SET



[TV PROG▲▼] → OK
[CANCEL] :EXIT
```

4 SET TIME

Use **NUMBER** key "1(▲)" or "4(▼)" to set the time.

- Press and hold either button to delay or advance the time by 30 minutes.

```
          CLOCK SET

TIME       DATE       YEAR
0:00       01:01        00


[1 – 6]
[PROG./CLOCK] :EXIT
```

5 SET DATE

Use **NUMBER** key "2(▲)" or "5(▼)" to set the date.

- Press and hold either button to change the date by 15 days.

6 SET YEAR

Use **NUMBER** key "3(▲)" or "6(▼)" to set the year.

7 RETURN TO NORMAL SCREEN

Press **CLOCK**.

To Make Corrections

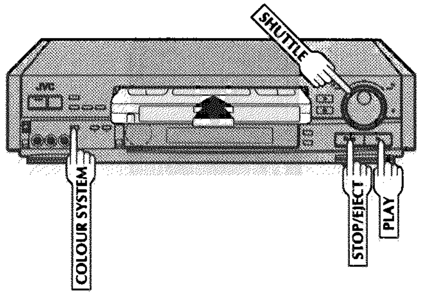
Perform steps **1** – **3** to call up the Clock Set screen, use **NUMBER** keys "1" – "6" to make the correction, then press **CLOCK**.

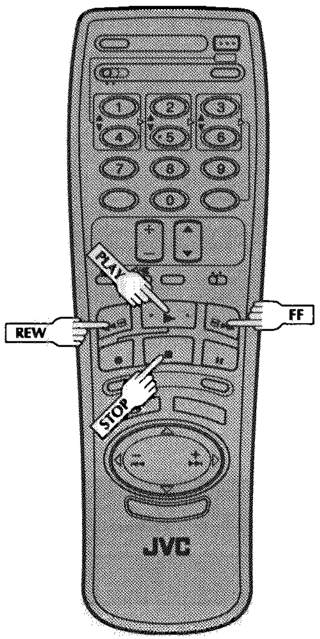
NOTE:

If, in step 7, the year digits are automatically cleared, it is possible that you have input 29th February for a non-leap year. Input the correct data.

Basic Playback

Turn on the TV and select the VIDEO channel (or AV mode).





The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.

1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is point toward the recorder. Don't apply too much pressure when inserting.

- The recorder power comes on automatically and the counter is reset to 0:00:00.
- Select the appropriate colour system by pressing the **COLOUR SYSTEM** button. (☞ pg. 24)
- If the record safety tab has been removed, playback begins automatically.

2 FIND PROGRAMME START POINT

If the tape is advanced past the start point, press **REW** or turn the **SHUTTLE** ring to the left and release it.
To go forward, press **FF** or turn the **SHUTTLE** ring to the right and release it.

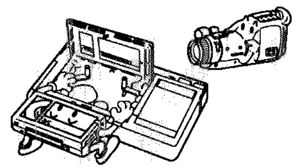
3 START PLAYBACK

Press **PLAY**. "B.E.S.T." appears on screen. (☞ pg. 18)

4 STOP PLAYBACK

Press **STOP** on the remote or **STOP/EJECT** on the recorder's front panel. Then press **STOP/EJECT** to remove the cassette.

Usable cassettes

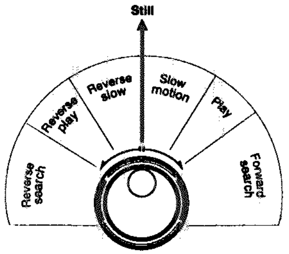


- Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
- This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Playback Features

Take advantage of special functions possible with the recorder's controls or the remote control.

NOTE:
Refer to the SHUTTLE ring illustration below as you read the following procedures.



Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**. If there is vertical jitter, use the **TV PROG.** buttons to correct the picture.

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE**.

OR

Press **PUSH JOG** ◁ or ▷.

To resume normal playback, press **PLAY**.

NOTE:
In the search, still or frame-by-frame playback mode, the picture will be distorted, and there may be a loss of colour.

Slow Motion

1 ACTIVATE SLOW-MOTION PLAYBACK

During playback or still, turn the **SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion (refer to the illustration to the left).

OR

During still picture, press and hold **PAUSE** for 2 seconds, then release. Press and release again to return to still picture.

OR

During still picture, press and hold **PUSH JOG** ◁ or ▷. Release to return to still picture.

To resume normal playback, press **PLAY**.

Variable-Speed Search

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring to the right for forward variable-speed search, or to the left for reverse variable-speed search (refer to the illustration to the left).

OR

During playback, press **PUSH JOG** ◁ or ▷.

- The more times you press, the faster the playback picture moves.
- To decrease speed, press the button for the opposite direction.

To resume normal playback, press **PLAY**.

High-Speed Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring all the way to the right for forward high-speed search, or to the left for reverse high-speed search.

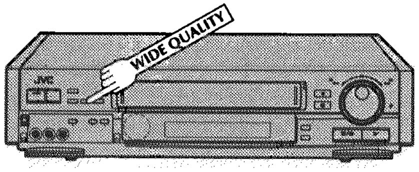
- For forward search with a visible picture, turn the **SHUTTLE** ring all the way to the right and release it within 1 second.
- For reverse search with a visible picture, turn the **SHUTTLE** ring all the way to the left and release it within 1 second.

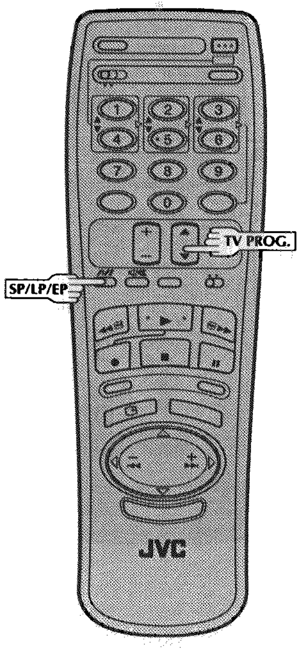
OR

Press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

- For short searches, press and hold **FF** or **REW** for over 2 seconds. When released, normal playback resumes.

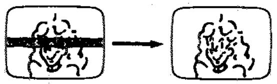
To resume normal playback, press **PLAY**.





Manual Tracking

Your video recorder is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the **TV PROG.** button.



1 OVERRIDE AUTOMATIC TRACKING

Press **SP/LP/EP (*/////*)** on the remote to engage manual tracking.

2 ADJUST TRACKING MANUALLY

Press **TV PROG.** ▲ or ▼ to adjust tracking.

3 RETURN TO AUTOMATIC TRACKING

Press **SP/LP/EP (*/////*)** on the remote to re-engage automatic tracking.

NOTE:

When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

Wide Quality [E639EE only]

Use this function to improve image contrast which tends to degrade especially with wide-screen TVs.

1 ACTIVATE WIDE QUALITY

During playback, press **WIDE QUALITY** on the recorder.

- The button will light in green.
- Pressing the button again turns off the light.
- Turn on/off the light according to the type of playback picture you want.
- The setting will remain effective even though you turn on/off the recorder.
- This function is also effective with large-screen 4:3 aspect ratio TVs as well.

Instant ReView

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last timer-recorded programme. If you have several programmes recorded, you can easily access any of them.

NOTES:

- *Before starting, make sure that the recorder is off and that the Timer mode is disengaged.*
- *Turn on the TV and select the VIDEO channel (or AV mode).*

1 ACTIVATE INSTANT REVIEW

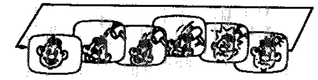
Press **REVIEW**. The recorder power comes on and the recorder searches for the index code indicating the start of the last timer-recorded programme. Once it's found, playback begins automatically.
If you have, for example, 3 programmes and wish to watch the first of the 3 programmes, press **REVIEW** three times. The recorder searches and begins playback automatically. You can access a programme as far as 9 index codes away from the current tape position.

NOTE:

Instant ReView is not possible while the recorder is in the Timer mode.

Repeat Playback

Your video recorder can automatically play back the whole tape 20 times repeatedly.



1 START PLAYBACK

Press **PLAY**.

2 ACTIVATE REPEAT PLAYBACK

Press **PLAY** and hold for over 5 seconds, then release.

- "PLAY" on the display panel blinks slowly.
- The tape plays 20 times automatically, and then stops.

3 STOP PLAYBACK

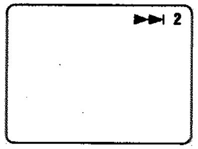
Press **STOP** at any time to stop playback.

NOTE:

*Pressing **PLAY**, **REW**, **FF** or **PAUSE** also stops Repeat Playback.*

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.



NOTE:

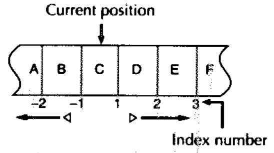
Before starting, make sure the recorder is in the Stop mode.

1 ACTIVATE INDEX SEARCH

Press **PUSH JOG** ◁ or ▷ (|◀◀ or ▶▶|). "|◀◀ 1" or "▶▶| 1" is displayed on screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press **PUSH JOG** ◁ or ▷ repeatedly until the correct index number is displayed.

Ex.: To locate the beginning of B from the current position, press **PUSH JOG** ◁ twice.
To locate the beginning of D from the current position, press **PUSH JOG** ▷ once.



- When the specified index code is located, playback begins automatically.

Counter Memory

Returns to the counter reading of "0:00:00" to conveniently find a specific place on the tape automatically.

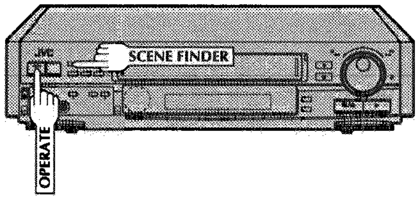
1 SET COUNTER MEMORY

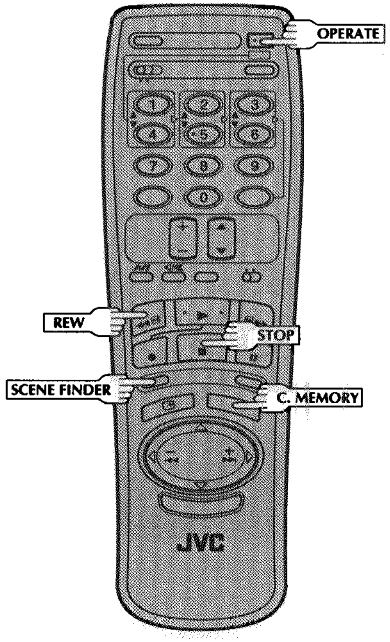
Press **C. RESET** during playback at a point you wish to locate later. The counter reads "0:00:00". Then press **C. MEMORY**, and "M" appears on the front display panel.

2 ACTIVATE COUNTER MEMORY

When you wish to return to the designated point, press **STOP** and then **REW** or **FF**.

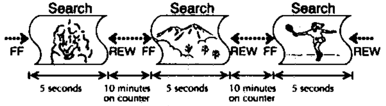
- The tape rewinds or fast-forwards and stops at about 0:00:00 automatically.
- To cancel Counter Memory, press **C.MEMORY** again.





Scene Finder

This function helps you check contents of unlabeled recorded tapes at the touch of a single button.



NOTE:

Scene Finder cannot be used when the recorder is in the Record mode.

1 **ACTIVATE SCENE FINDER**

Press **SCENE FINDER**. The recorder starts forward high-speed search for 5 seconds and then fast-forwards 10 minutes on the counter. This cycle is repeated until the end of the tape is reached.

- To start Scene Finder in the reverse direction, press **SCENE FINDER** and then press the **REW** button within 2 seconds. This cycle is repeated until the beginning of the tape.
- During Scene Finder, "PLAY" appears blinking on the display panel. During fast forward or rewind, " ▷▷ " or " ◁◁ " appears on screen.

2 **STOP SCENE FINDER**

Press **STOP**.

NOTES:

- *During Scene Finder high-speed search, you can also hear the tape sound. During fast forward or rewind, you hear the current TV sound instead.*
- *Scene Finder does not function during Index Search.*

Next Function Memory

You can set your recorder's power to go off automatically after the tape is fully rewound. Before starting, make sure the recorder is in the Stop mode.
For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press **OPERATE** within 2 seconds.

NOTE:

*If you want the power to be turned off automatically when the counter reads "0:00:00" (instead of at the beginning of the tape), press **C.MEMORY** so that the "M" mark appears before pressing **REW**.*

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to the remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1 **REMOVE POWER SUPPLY**

Unplug the mains power cord from the mains outlet.

2 **SET A/B CODE SWITCH**

Set to B.

3 **RE-SUPPLY POWER**

Plug the mains power cord back into the mains outlet.

4 **TURN THE RECORDER ON**

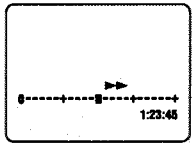
Press **OPERATE** on the remote control. The recorder will now only respond to B code signals.

NOTE:

Some TV sets may malfunction in response to the B mode. If this happens, switch back to the A mode.

Tape Position Indicator

The tape position indicator appears on screen when, from the Stop mode, you press **FF**, **REW** or perform an Index Search. The position of "■" in relation to "0" (beginning) or "+" (end) shows you where you are on the tape.
"O.S.D." (☞ pg. 5) must be set to "ON", or the indicator will not appear.



NOTE:

Depending on the type of tape used, there may be times when the indication is not correct.

Rental Return (E639EE only)

Simply by pressing one button, the recorder stops, rewinds, and ejects the tape for you. A quick and easy way to rewind rental video tapes before you return them to the shop.

1 **ACTIVATE RENTAL RETURN**

Anytime except during recording, press **RENTAL RETURN**.

- The recorder will rewind the tape to the beginning and eject it.
- ▣ on the display panel will blink while in the Rental Return mode.
- To cancel the Rental Return mode, press **STOP**.

Soundtrack Selection [E639EE only]

Your video recorder is capable of recording three soundtracks (HI-FI L, HI-FI R and NORM) and will play back the one you select.

During Playback
Pressing **AUDIO MONITOR** (or ◁/✕ on the remote control) changes the soundtrack being played back as follows:

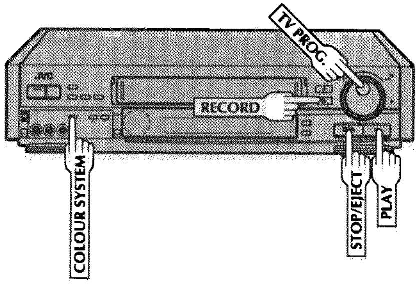
TRACK		USE
Recorder's Front Panel	On-Screen Display	
L + R	HI FI L ▷ ◁ R	For Hi-Fi stereo tapes
L	HI FI L ▷	For main audio of Bilingual tapes
R	HI FI ◁ R	For sub audio of Bilingual tapes
NORM	NORM	For audio-dubbed tapes
L + R + NORM	HI FI NORM	For audio-dubbed tapes

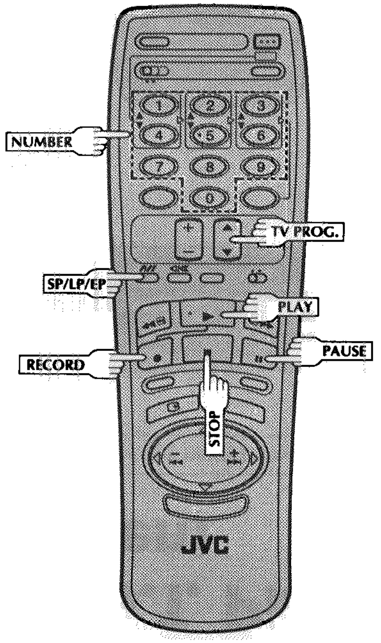
NOTES:

- *"L + R" should normally be selected. In this mode, Hi-Fi stereo tapes are played back in stereo, and the NORM track is played back automatically for tapes with only normal audio.*
- *"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 5).*

Basic Recording

Turn on the TV and select the VIDEO channel (or AV mode).





TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. You can "capture" a TV programme using your video recorder.

1

LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

- The counter is reset to 0:00:00 and the recorder power comes on automatically.
- Select the appropriate colour system by pressing the **COLOUR SYSTEM** button.(☞ pg. 24)

2

CHOOSE A PROGRAMME

Press **TV PROG. ▲/▼** or the **NUMBER** keys to select the channel you wish to record.

- The **TV PROG.** dial can also be used to select a channel.

3

SET TAPE SPEED

Press **SP/LP/EP**. Check the SP/LP* indicator on the recorder display panel to confirm the selected tape speed.

*EP is displayed on screen only.

4

START RECORDING

Press and hold **RECORD** and **PLAY** on the remote control, or press **RECORD** on the recorder.

B.E.S.T. takes place at the beginning of each first SP and first LP (or EP) recording after inserting the cassette (☞ pg. 18).

5

PAUSE/RESUME RECORDING

Press **PAUSE**. Press **PLAY** to resume recording.

6

STOP RECORDING

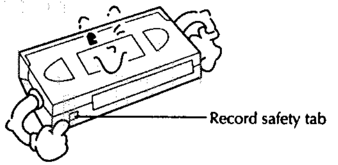
Press **STOP** on the remote control or **STOP/EJECT** on the recorder. Then press **STOP/EJECT** to remove the cassette.

NOTE (For HR-E639EE Owners):

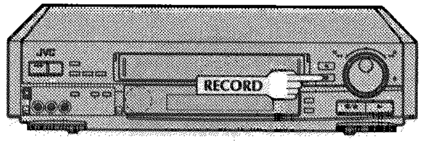
Hi-Fi audio recording in NTSC EP mode is not possible.

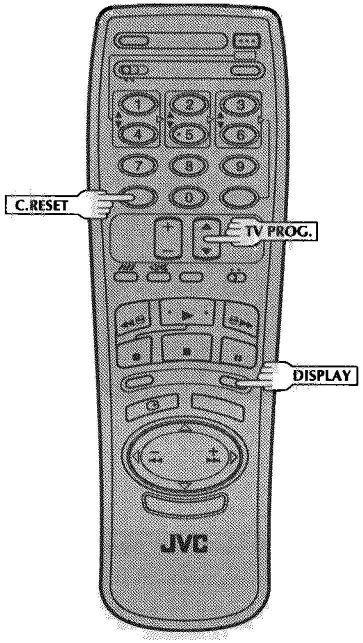
Accidental erasure prevention

- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Recording Features





Record One Programme While Watching Another

1

SELECT CHANNEL TO WATCH

Once recording is in progress, all you need to do is to set the channel controls on the TV for the station you wish to view.

- The programme selected with the TV's channel controls appears on the TV screen while the one selected with the **TV PROG.** button(s) is recorded on the tape.

Elapsed Recording Time Indication

You can check the exact time of a recording.

1

SET COUNTER DISPLAY

Press **DISPLAY** until a counter reading appears on the dispay panel.

- Pressing the button changes the type of display: Channel, Clock or Counter.

2

RESET COUNTER

Press **C. RESET** before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs.

Instant Timer Recording (ITR)

This easy method lets you record for from 30 minutes to 6 hours (selectable in 30-min. increments), and shuts the recorder off after recording is finished.

1

START RECORDING

Press **RECORD** on the recorder.

2

ENGAGE ITR MODE

Press **RECORD** again. "REC" blinks and 0:30 appears on the front display panel.

3

SET RECORDING DURATION

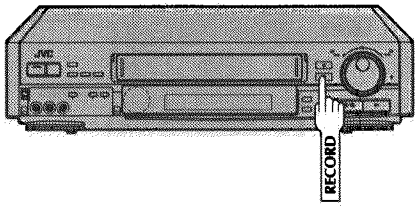
If you want to record for more than 30 minutes, press **RECORD** to extend the time. Each press extends recording time by 30 minutes.

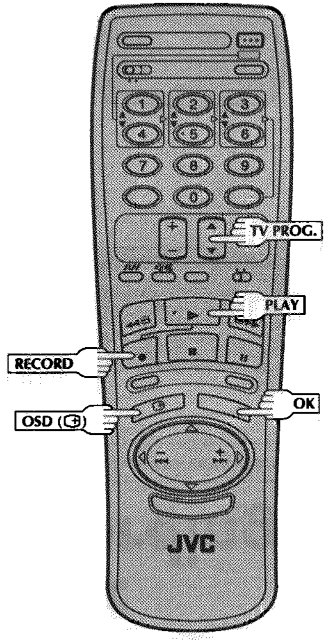
NOTE:

*You can only perform ITR using the **RECORD** button on the recorder's front panel.*

B.E.S.T. Picture System

Turn on the TV and select the VIDEO channel (or AV mode).





The B.E.S.T. (Biconditional Equalised Signal Tracking) system checks the condition of the tape in use during recording and playback, and compensates to provide the highest-possible recording and playback pictures. The default setting is "ON".

Recording

1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact.

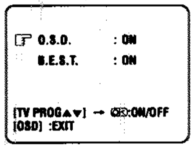
- The recorder power comes on automatically.

2 ACCESS MODE SELECT SCREEN

Press **OSD**(⊡) and the Language screen appears. (To change the language, ☞ pg. 5) Press **OK** on the remote control.

3 CONFIRM B.E.S.T. STATUS

The default setting is "ON". If this is the case, go to step **4**. If not, press **TV PROG.▼** to place the pointer next to "B.E.S.T.", then press **OK** to set to "ON".



```
☞ O.S.D.        : ON
  B.E.S.T.      : ON

[TV PROG▲▼] → OK:ON/OFF
[OSD]  :EXIT
```

4 CLOSE MODE SELECT SCREEN

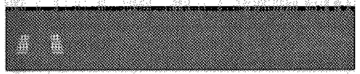
Press **OSD** (⊡).

5 START RECORDING

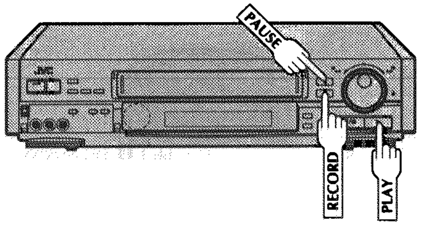
Press and hold **RECORD** and **PLAY** on the remote, or press **RECORD** on the recorder.

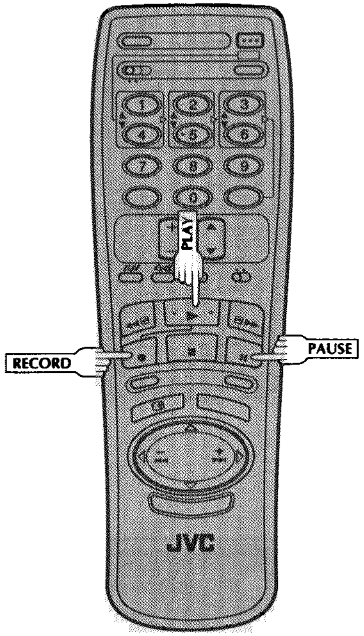
- The recorder spends approximately 7 seconds assessing the condition of the tape, then begins recording.
- "B.E.S.T." appears on screen and blinks when adjustment is complete.

Display Panel Indication [E639EE only]



As the tape check progresses, the "– –" marks on the display panel increase upward.





NOTES:

- *The B.E.S.T. system works for SP and LP (or EP) modes only after a tape has been inserted and the Record mode is first initiated. It does not work during recording.*
- *In the case of timer recording, the B.E.S.T. system works before recording is initiated.*
- *Once the cassette is ejected, the B.E.S.T. data is cancelled. The next time the cassette is used for recording, B.E.S.T. is re-performed.*

ATTENTION:

*Since the B.E.S.T. system works before recording actually starts, there is a delay of approximately 7 seconds after **RECORD** and **PLAY** on the remote are pressed, or **RECORD** on the recorder is pressed. To make sure you record the desired scene or programme in its entirety, first perform the following steps:*

*1) Press and hold **PAUSE** and **RECORD** to engage the RECORD PAUSE mode.*
  - *The recorder then automatically checks the condition of the tape and, after approximately 7 seconds, re-enters RECORD PAUSE.*

*2) Press **PLAY** to start recording.*
  - *If you want to bypass the B.E.S.T. system and begin recording immediately, set "B.E.S.T." to "OFF" in step 3 on page 18.*

Playback

The recorder assesses the quality of the tape once you initiate playback.

When watching a tape recorded with "B.E.S.T." set to "ON", it is recommended that you leave B.E.S.T. on during playback as well.

1 START PLAYBACK

Press **PLAY**.

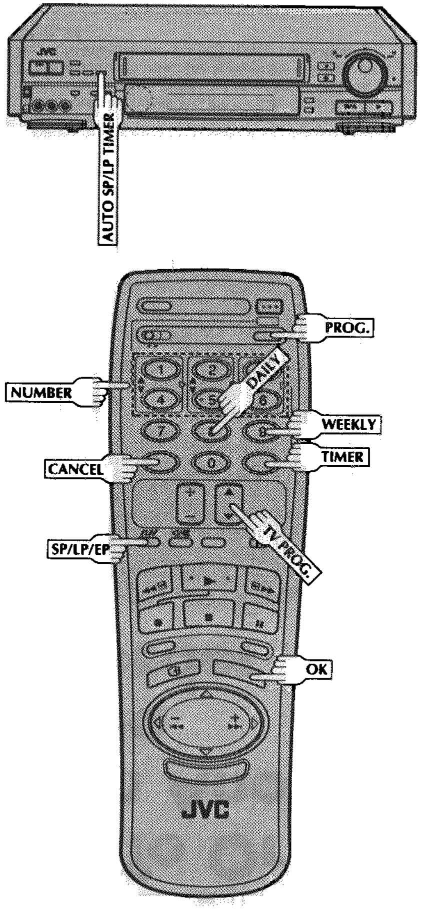
- The recorder adjusts the playback picture quality based on the quality of the tape in use.
- B.E.S.T. is active during Auto Tracking.
  "B.E.S.T." appears blinking on the screen.

NOTES:

- *When watching a rental tape, or one recorded on another video recorder, set B.E.S.T. to your preference by performing steps 2 through 4 on page 18.*
- *"B.E.S.T." only appears at the beginning of automatic tracking. Even though it doesn't appear after that, the B.E.S.T. function is operative.*

Timer Programming

Remember, the clock must be set before you can programme the timer (☞ pg. 9).



Before performing the following steps:

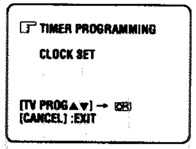
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).
- Select the appropriate colour system by pressing the **COLOUR SYSTEM** button.(☞ pg. 24)

1 ACCESS MODE SELECT SCREEN

Press **PROG.**

2 ACCESS TIMER PROGRAMMING SCREEN

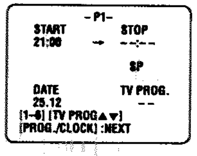
Press **TV PROG.▲/▼** to place the pointer next to "TIMER PROGRAMMING", then press **OK** on the remote control.



```
☞ TIMER PROGRAMMING

  CLOCK SET


[TV PROG▲▼] → OK
[CANCEL] :EXIT
```

3 ENTER PROGRAMME START TIME

Press **NUMBER** key "1(▲)" or "4(▼)" to enter the time you want recording to start.

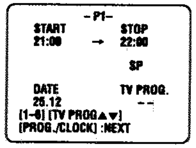


```
           - P1-
  START           STOP
  21:00     →     --:--

                   SP

  DATE            TV PROG.
  25.12             --
[1-6] [TV PROG▲▼]
[PROG./CLOCK] :NEXT
```

- Press and hold either button to delay or advance the time by 30 minutes.
- If the Programme is already used, press **PROG.** until a vacant Programming screen appears.

4 ENTER PROGRAMME STOP TIME

Press **NUMBER** key "2(▲)" or "5(▼)" to enter the time you want recording to stop.



```
           - P1-
  START           STOP
  21:00     →     22:00

                   SP

  DATE            TV PROG.
  25.12             --
[1-6] [TV PROG▲▼]
[PROG./CLOCK] :NEXT
```

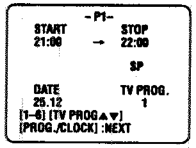
- Press and hold either button to delay or advance the time by 30 minutes.

5 ENTER PROGRAMME DATE

Press **NUMBER** key "3(▲)" or "6(▼)" to enter the date.

6 ENTER CHANNEL POSITION

Press **TV PROG.▲/▼** to select the channel you wish to record.



```
           - P1-
  START           STOP
  21:00     →     22:00

                   SP

  DATE            TV PROG.
  25.12              1
[1-6] [TV PROG▲▼]
[PROG./CLOCK] :NEXT
```

7 SET TAPE SPEED

Press **SP/LP/EP** to set the tape speed.

- For each additional programme, press **PROG.** and repeat steps **3** – **7**.

8 RETURN TO NORMAL SCREEN

Press **PROG.** as many times as necessary to return to normal screen.

9 ENGAGE RECORDER'S TIMER MODE

Press **TIMER**.

To Timer-Record Weekly Or Daily Serials . . .

. . . anytime during steps **3** through **7**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday–Friday).

NOTES:

- *You can programme this recorder to timer-record as many as 8 programmes. To record the extra programme, you must first cancel any unnecessary programmes (☞ Check And Cancel Programmes).*
- *For safety, your recorder disables all other functions while in the Timer mode. If you want to use the recorder but its Timer mode is engaged, press **TIMER** and all other functions are operable. To re-engage the timer, press **TIMER**.*
- *In case of a power failure after programming, the recorder's memory backup keeps your selections for 18 hours.*
- *Backup time becomes shorter as the unit's internal parts become old. When this occurs, please consult your nearby JVC dealer.*

Check And Cancel Programmes

1 ACCESS TIMER PROGRAMMING SCREEN

Perform steps **1** and **2** of Timer Programming to call up the Timer Programming screen.

- If the recorder is in the Timer mode, first press **TIMER** to exit the mode.

2 SELECT PROGRAMME

Press **PROG.** until the programme you wish to call up appears.

- Each time you press **PROG.** the next programme's information appears up to "P8" (Programme 8).
- If you want to make a correction, use **NUMBER** key "1" – "6" and **TV PROG.▲/▼**.
- If you want to cancel a programme, press **CANCEL**.

3 RETURN TO NORMAL SCREEN

Press **PROG.** as many times as necessary to return to normal screen.

- Press **TIMER** to engage the recorder's timer mode.

Auto SP/LP Timer

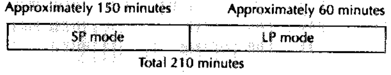
If, when recording in SP mode, there is not enough tape to record the entire programme, the recorder automatically switches to LP mode (with PAL broadcasts) or EP mode (with NTSC broadcasts) to allow complete recording.

1 ENGAGE AUTO SP/LP TIMER

Press **AUTO SP/LP TIMER** on the recorder front panel. The button lights "orange".

For Example . . .

Recording a PAL-broadcast program of 210 minutes in length onto a 180-minute tape

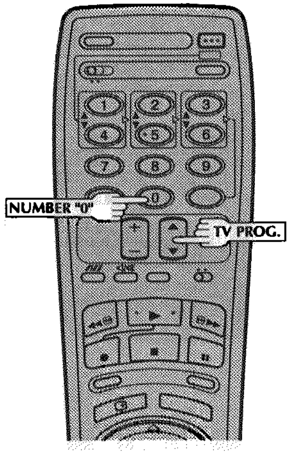


Make sure you press **AUTO SP/LP TIMER** before performing timer programming.

NOTES:

- *The Auto SP/LP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly with any tapes longer than E-180 as well as some tapes of shorter lenghs.*
- *Even if, in step 1, you press **AUTO SP/LP TIMER** and it lights "orange", that doesn't mean that the recorder will automatically change from SP to LP (or EP) mode during the course of the recording. Watch the tape later to confirm.*
- *If you have programmed the recorder to timer-record 2 or more programs, the second programme and those thereafter may not fit on the tape if you engage the Auto SP/LP Timer mode. In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *There may be some noise at the point on the tape where the recorder switches from SP to LP (or EP) mode.*

Edit To Or From Another Video Recorder


NUMBER "0"
TV PROG.

IMPORTANT:
- To edit, both the player and the recorder must be of the same colour system. Press your recorder's **COLOUR SYSTEM** button to select the appropriate colour system.
- For more information on multi-system compatibility, ☞ pg. 24.

You can use your video recorder as the source player or the recording deck.

1 MAKE CONNECTIONS

Connect the player's AUDIO/VIDEO OUT connector to the recorder's AUDIO/VIDEO IN connector.

For HR-E639EE Owners . . .
- When connecting to a monaural recorder, connect your recorder's AUDIO L IN/OUT connector to the AUDIO IN/OUT connector on the monaural recorder.

For HR-E539EE Owners . . .
- When connecting to a Hi-Fi recorder, connect your recorder's AUDIO IN/OUT connector to the AUDIO L IN/OUT connector on the Hi-Fi recorder.

2 SET RECORDING DECK'S INPUT MODE

Set to AUX. With this video recorder, press **NUMBER** Key "0" or **TV PROG.**."F-AU"* will appear instead of a channel number.

* "AU" will appear with HR-E539EE.

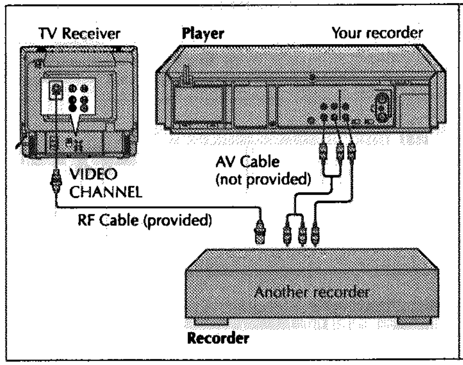
3 START SOURCE PLAYER

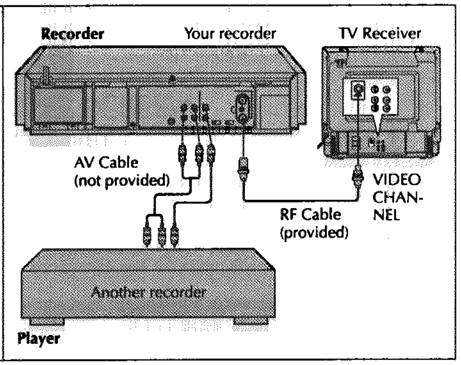
Engage its Play mode.

4 START RECORDING DECK

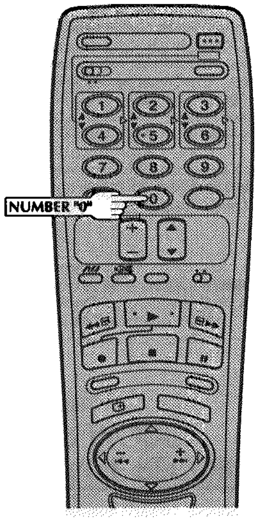
Engage its Record mode.

NOTES:
- *All necessary cables can be obtained from your dealer.*
- *NTSC tapes being played back in the NTSC → PAL mode (☞ p. 25) cannot be dubbed to another recorder.*
- *When you dub an NTSC tape using your recorder as the playback deck, select NTSC 3.58 (or NTSC 4.43) with the* ***COLOUR SYSTEM*** *button. (☞ p. 24)*


TV Receiver
Player
Your recorder
VIDEO CHANNEL
AV Cable (not provided)
RF Cable (provided)
Another recorder
Recorder


Recorder
Your recorder
TV Receiver
AV Cable (not provided)
VIDEO CHAN-NEL
RF Cable (provided)
Another recorder
Player

Edit From A Camcorder



You can use a camcorder as the source player and your video recorder as the recorder.

1 MAKE CONNECTIONS

Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's front panel AUDIO/VIDEO input connectors.

For HR-E639EE Owners . . .
- When using a monaural camcorder, connect its AUDIO OUT connector to the AUDIO IN L connector on your recorder.

For HR-E539EE Owners . . .
- When using a Hi-Fi camcorder, connect the camcorder's AUDIO OUT L connector to the AUDIO IN connector on your recorder.

- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling the recorder. Refer to the camcorder's instruction manual for operating procedure.

2 SET RECORDER'S INPUT MODE

Press **NUMBER** key "0". "F-AU"* appears in place of a channel number.

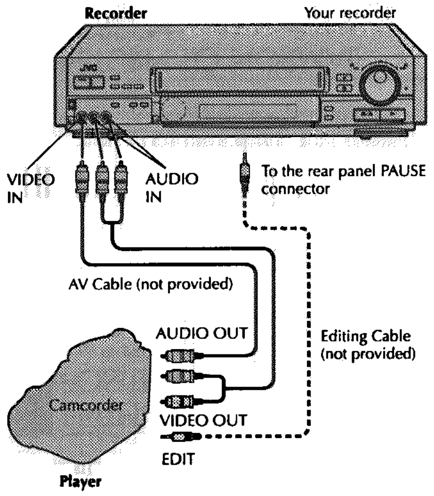
* "AU" will appear with HR-E539EE.

3 START CAMCORDER

Engage its Play mode.

4 START RECORDER

Engage its Record mode.

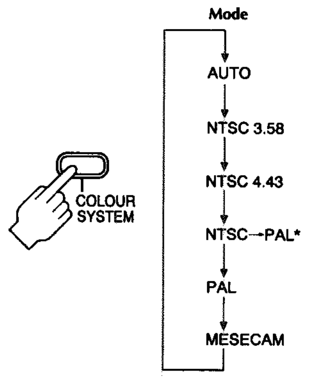

Recorder
Your recorder
VIDEO IN
AUDIO IN
To the rear panel PAUSE connector
AV Cable (not provided)
AUDIO OUT
VIDEO OUT
EDIT
Editing Cable (not provided)
Camcorder
Player

NOTE:

Connections made to the front panel AUDIO/VIDEO input connectors automatically override those made to the rear panel AUDIO/VIDEO input connectors.

IMPORTANT:
- To edit, both the player and the recorder must be of the same colour system. Press your recorder's **COLOUR SYSTEM** button to select the appropriate colour system.
- PAL, SECAM and NTSC camcorders can be used as a player for editing.
- For more information on multi-system compatibility, ☞ pg. 24.

Setting Of The Colour System Select Buttons


COLOUR SYSTEM
Mode
AUTO
NTSC 3.58
NTSC 4.43
NTSC→PAL*
PAL
MESECAM

* "NTSC → PAL" appears during playback only.

Use the **COLOUR SYSTEM** button on the recorder's front panel to select the colour system. Pressing this button changes the mode as illustrated on the left. The On-Screen display will show which mode is selected.

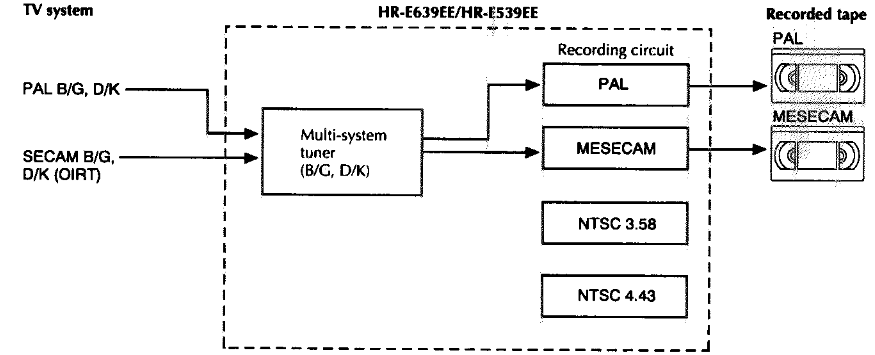
Mode Display	Description
AUTO (Colour Signal)	Usually set to this mode. This mode automatically detects PAL, NTSC, SECAM or MESECAM and adjusts to the colour system being recorded or played back. When it does not perform properly, set the colour system manually.
MANUAL (Colour Signal)	For recording, there is a choice of 4 selectable modes; PAL/MESECAM/NTSC 3.58/NTSC4.43. Select the mode that matches the colour signal being received. For playback, there is an additional mode which allows NTSC tapes to be played back and viewed on PAL TVs.

NOTES:

- *In the AUTO mode, NTSC signals will be automatically recorded as NTSC 3.58.*
- *In the AUTO mode, NTSC tapes will be played back as NTSC 3.58.*
- *SECAM signals will always be recorded as MESECAM. Select the AUTO or the MESECAM mode when recording SECAM signals.*
- *When playing back a SECAM tape, select the AUTO or the MESECAM mode. The playback picture will always be monochrome.*
- *In the NTSC4.43 mode, with some TVs, on-screen displays (Program screen etc.) may roll up or down and there may be a loss of colour. When this happens, select the AUTO mode.*

Off-Air Recording

The built-in multi-system tuner is capable of receiving PAL B/G and D/K, and SECAM B/G and D/K broadcasts.

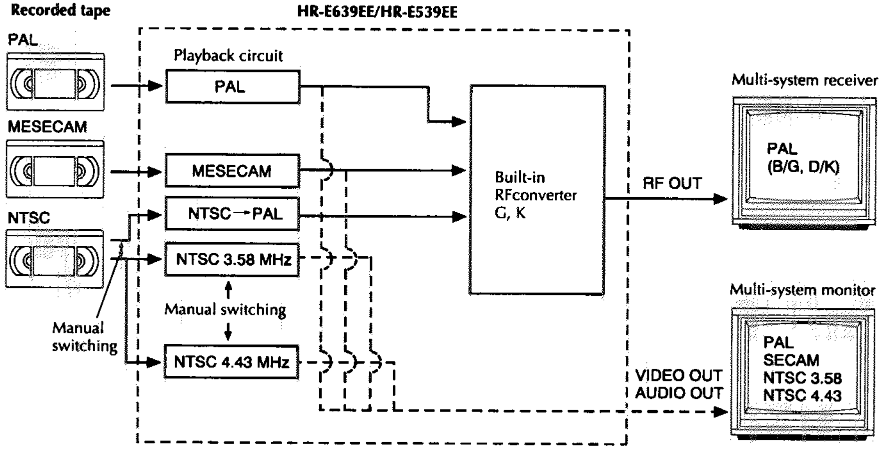

TV system
HR-E639EE/HR-E539EE
Recorded tape
PAL B/G, D/K
SECAM B/G, D/K (OIRT)
Multi-system tuner (B/G, D/K)
Recording circuit
PAL
MESECAM
NTSC 3.58
NTSC 4.43
PAL
MESECAM

NOTE:

This model does not operate in BRAZIL (PAL-M) or ARGENTINA (PAL-N).

Playback

This recorder can play back all 3 types of recorded tape.


Recorded tape
HR-E639EE/HR-E539EE
PAL
MESECAM
NTSC
Playback circuit
PAL
MESECAM
NTSC→PAL
NTSC 3.58 MHz
Manual switching
NTSC 4.43 MHz
Manual switching
Built-in RFconverter G, K
RF OUT
VIDEO OUT
AUDIO OUT
Multi-system receiver
PAL (B/G, D/K)
Multi-system monitor
PAL
SECAM
NTSC 3.58
NTSC 4.43

NOTES:

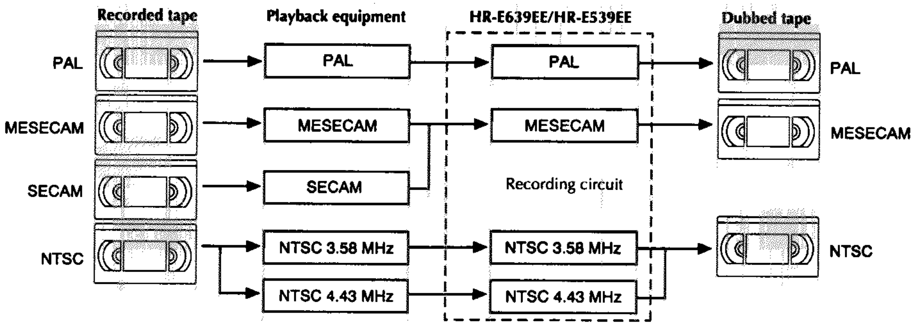
When viewing NTSC tapes on a PAL TV set:

- *The picture may shrink vertically with black bars appearing at the top and bottom of the screen. This is not a malfunction on the part of the video recorder nor the TV.*
- *The picture may roll up or down. This can be corrected using the V-HOLD control found on some TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)*
- *During search, still, or frame-by-frame playback, the picture will be distorted, and there may be a loss of colour.*

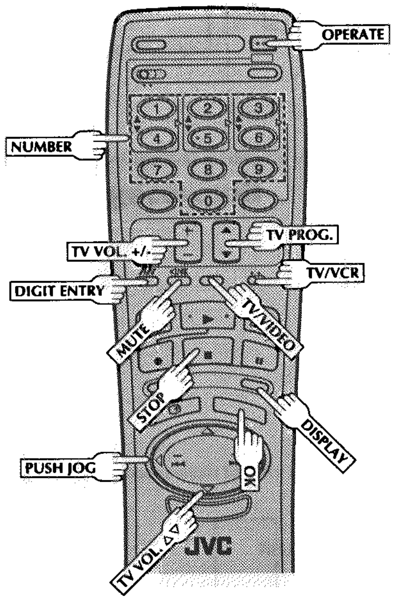
ATTENTION:
When this recorder is connected to a multi-system TV, the audio signal may not be heard or may be noisy if the colour system select switch of the TV is adjusted to the AUTO position. In such a case, change the setting of the colour system select switch of the TV to the position which corresponds to the setting (G or K) of the RF converter system select switch on the rear panel of the recorder.

Tape-To-Tape Editing

There are 4 different types of recorded tape, depending on the signal recorded.


Recorded tape
Playback equipment
HR-E639EE/HR-E539EE
Dubbed tape
PAL
MESECAM
SECAM
NTSC
PAL
MESECAM
SECAM
NTSC 3.58 MHz
NTSC 4.43 MHz
PAL
MESECAM
Recording circuit
NTSC 3.58 MHz
NTSC 4.43 MHz
PAL
MESECAM
NTSC

Multi-Brand Remote Control



CODE	TV BRAND NAME
01	JVC
02	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
03	FERGUSON
04	PHILIPS
05	BLAUPUNKT, GRUNDIG
06	SONY
07	PANASONIC
08	GRAETZ, ITT, LUXOR, SALORA, SELECO
09	MIVAR
10	HITACHI
11	TOSHIBA
12	MITSUBISHI
13	FINLUX
14	NOKIA
15	SHARP
16	SAMSUNG

Your remote control can operate the basic functions of your TV set. In addition to JVC TVs, other manufacturer's TVs can also be controlled by setting the appropriate switch on the remote control.

Before you start . . .
- Turn on the TV using its remote control.
- Set the remote control's **TV/VCR** switch to TV.

NOTE:

*If your TV is a JVC, you don't have to set the code in step **1**. Go to step **2**.*

1 SET TV BRAND CODE

Refer to the chart below. While holding down **OPERATE**, enter your TV's brand code using the **NUMBER** keys, then press **STOP**.

- You don't have to repeat this step until you replace your remote control's batteries.

2 TRY OPERATING TV

Press **OPERATE** on the remote to turn the TV off. If it goes off, try other operations.

- The **OPERATE** button, **TV/VIDEO** button, **TV PROG. ▲/▼** button, **TV VOL. +/-** (or △/▽) button and **MUTE** button on the remote can all be used to operate the TV.
- To return the remote to video recorder control, set its **TV/VCR** switch to VCR.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many other models, it may not work with your TV, or in some instances, may have limited function capability.

Control Your TV Using Additional Buttons

The **NUMBER** keys on the remote can also be used to select the TV's channel by setting the remote control to the TV mode.

1 Set the **TV/VCR** switch to TV.

2 Use the **NUMBER** keys, and the **DIGIT ENTRY** (**-/--**) button, the **PUSH JOG** button, the **DISPLAY** button or the **OK** button to select the TV's channel.

- With televisions under Code 01, 03, 04, 06, 07, 10 or 11, the **DIGIT ENTRY** button corresponds to the 1-digit/2-digit entry switching button (often labelled - /- -) of your TV's remote control.
- With televisions under Code 01, 08 or 09, the **PUSH JOG** ◁ button corresponds to the 10 + button, and the **PUSH JOG** ▷ button corresponds to the 20 + button of your TV's remote control.
- With televisions using Code 09, the **DISPLAY** button corresponds to the 30 + button.
- With televisions using Code 06, the **OK** button corresponds to the ENTER button of your TV's remote control.

NOTE:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your video recorder off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. No power is applied to the recorder.	• The mains power cord is disconnected.	Connect the mains power cord.
2. The clock is functioning properly, but the recorder cannot be powered.	• "TIMER" is displayed on the display panel.	Press the **TIMER** button to turn the "TIMER" indicator off.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape does not run during recording.	• The recorder is in the Pause mode.	Press **PLAY** to disengage the Pause mode.
2. The tape stops during rewind or fast-forward.	• "M" is displayed on the display panel.	Press **C.MEMORY** to deactivate the Counter Memory function and turn the "M" indicator off.
3. The tape will not rewind or fast-forward.	• The tape is already fully rewound or fast-forwarded.	Check the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The playback picture does not appear while the tape is running.	• If you're using the RF OUT connection, the TV receiver's channel selector is set to the wrong video channel. • If you're using the AV connection, the TV receiver is not set to the AV mode.	If you are using the RF OUT connection, set the TV receiver to the RF converter channel (UHF 36). (☞ pg. 3) If you are using the AV connection, set the TV to its AV mode.
2. Noise appears during visual search.	• This is normal.	
3. Noise appears during normal playback.	• The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 12)
4. Noise appears during slow-motion playback.	• The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 12)
5. Noise appears during still playback.		Press **TV PROG. ▲** or **▼** a few times to remove the noise bars from the screen.
6. [E639EE only] Breaks are noticeable in Hi-Fi soundtrack.	• Automatic tracking is engaged.	Engage and adjust tracking manually. (☞ pg. 12)
7. The playback picture is blurred or interrupted while TV broadcasts are clear.	• The video heads may be dirty.	Consult your JVC dealer.
8. Playback picture has a loss of colour.	• The wrong colour system is selected for the tape being played back. • The wrong colour system was selected during recording.	Select the correct colour system by pressing the **COLOUR SYSTEM** button. (☞ pg. 24) Once recorded, the signal cannot be corrected. Be sure to choose the correct setting before recording.
9. No sound accompanies the playback picture.	• The **SYSTEM** switch on the recorder's rear panel is set to the wrong position.	Set it to the correct position for the TV broadcast system used in your area. (☞ pg. 4.)

CONTINUED ON NEXT PAGE.

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	• There is no cassette loaded, or the cassette loaded has had its Record Safety tab removed.	Insert a cassette, or using adhesive tape, reseal the slot where the tab was removed.
2. TV broadcasts cannot be recorded.	• "AU" has been selected as the input mode.	Set to the desired channel.
3. Tape-to-tape editing is not possible.	• The source (another video recorder, camcorder) has not been properly connected. • All necessary power switches have not been turned on. • The input mode is not correct.	Confirm that the source is properly connected. Confirm that all units' power switches are turned on. Set the input mode to "AU".
4. Camcorder recording is not possible.	• The camcorder has not been properly connected. • The input mode is not correct.	Confirm that the camcorder is properly connected. Set the input mode to "AU".

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	• The clock and/or the timer have been set incorrectly. • The timer is not engaged.	Re-perform the clock and/or timer settings. Press **TIMER** and confirm that "TIMER" is displayed on the display panel.
2. On-screen timer programming is not possible.	• Timer recording is in progress.	Timer programming can't be performed while a timer recording is in progress. Wait until it finishes.
3. "TIMER" and "OO" on the display panel won't stop blinking.	• The timer is engaged but there's no cassette loaded.	Load a cassette with the Record Safety tab intact, or cover the hole using adhesive tape.
4. The cassette is automatically ejected, and "TIMER" and "OO" on the display panel won't stop blinking.	• The loaded cassette has had its Record Safety tab removed.	Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the Record Safety tab intact.
5. "TIMER" blinks for 10 seconds and the Timer mode is disengaged.	• **TIMER** has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly.	Check the programmed data and re-program as necessary, then press **TIMER** again.
6. The cassette is automatically ejected, the power shuts off and "TIMER" and "OO" won't stop blinking.	• The end of the tape was reached during timer recording.	The programme may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire programme.

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Whistling or howling is heard from the TV during camcorder recording.	• The camcorder's microphone is too close to the TV. • The TV's volume is too high.	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
2. The channel cannot be changed.	• Recording is in progress.	Press **PAUSE** to pause the recording, change channels, then press **PLAY** to resume recording.
3. The remote control won't operate the TV.	• The **TV/VCR** switch is in the wrong position.	Set the switch to TV.

QUESTIONS AND ANSWERS

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

Q. Can the video recorder indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

Q. During search, slow, still and frame-by-frame playback, I can't hear any audio. What's the problem?
A. This is normal.

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

Q. Noise bars appear during multi-speed search. What's the problem?
A. This is normal.

Q. Other than preventing further recording, what effect does removing the Record Safety tab have?
A. It disables marking of index codes.

Q. Sometimes, during Index Search, the video recorder can't find the programme I want to see. Why not?
A. There may be index codes too close together.

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

Q. Can the video recorder indefinitely remain in the Record-Pause mode?
A. No. The video recorder goes to its Stop mode automatically after 5 minutes to protect the heads.

Q. What happens if the tape runs out during recording?
A. The video recorder automatically rewinds it to the beginning.

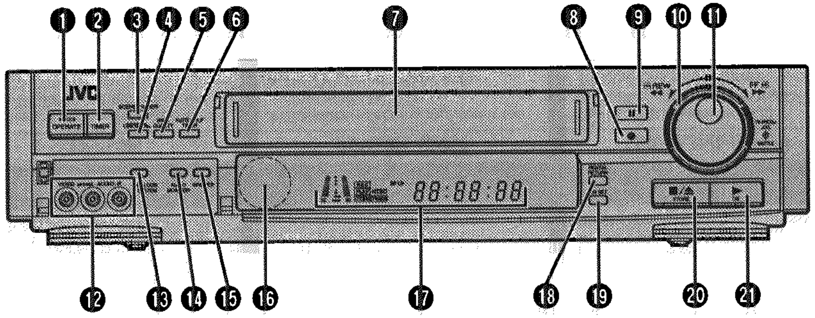
TIMER RECORDING

Q. " REC " and "TIMER" remain lit on the display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

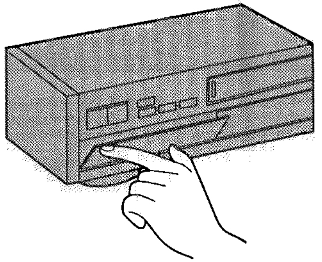
Q. Can I program the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the program or tape you're viewing can be heard.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the recorder off and unplug the mains power cord. Then plug it in again and turn the recorder on. Take out the cassette. After checking the cassette, operate the unit as usual.

FRONT VIEW

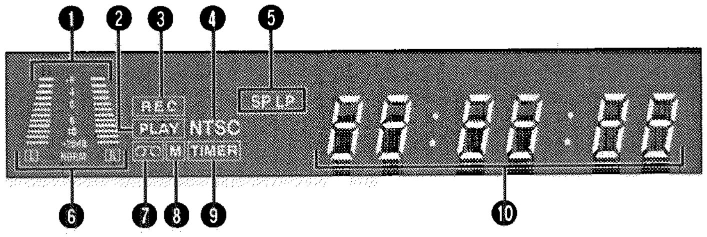


Open the lid to access covered connectors and buttons.



① OPERATE Button (☞ pg. 4)
② TIMER Button (☞ pg. 21)
③ SCENE FINDER Button (☞ pg. 14)
④ REVIEW Button (☞ pg. 13)
⑤ WIDE QUALITY Button [E639EE](☞ pg. 12)
DISPLAY Button [E539EE](☞ pg. 17)
⑥ AUTO SP/LP TIMER Button (☞ pg. 21)
⑦ Cassette Loading Slot
⑧ RECORD Button (☞ pg. 16)
⑨ PAUSE Button (☞ pg. 11)
⑩ SHUTTLE Ring (☞ pg. 10)
⑪ Jog Dial (☞ pg. 11)
TV PROG. Dial (☞ pg. 6)
⑫ VIDEO and AUDIO Input Connectors (☞ pg. 23)
* The HR-E539EE has only one Audio input connector.
⑬ COLOUR SYSTEM Button (☞ pg. 24)
⑭ AUDIO MONITOR Button [E639EE only]
(☞ pg. 15)
⑮ SP/LP/EP Button (☞ pg. 16)
⑯ infrared Beam Receiving window
⑰ Display Panel (☞ pg. 31)
⑱ RENTAL RETURN Button [E639EE](☞ pg. 15)
COUNTER RESET [E539EE](☞ pg. 13)
⑲ CH SET Button (☞ pg. 6)
⑳ STOP/EJECT Button (☞ pg. 10)
STORE Button (☞ pg. 7)
㉑ PLAY Button (☞ pg. 10)
OK Button (☞ pg. 5)

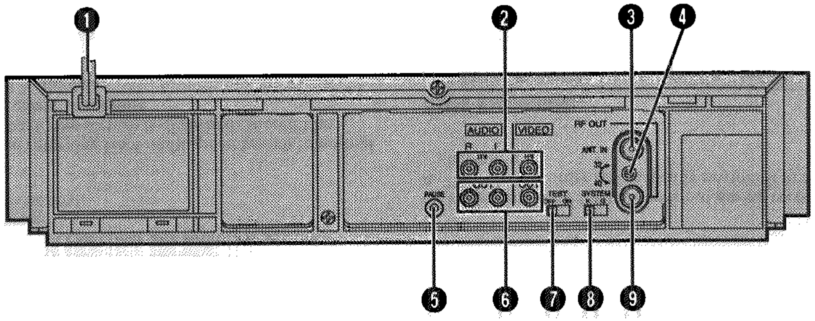
DISPLAY PANEL



① B.E.S.T. Picture System Display* (☞ pg. 18)
Audio Level Indicator*
② PLAY Indicator (☞ pg. 10)
③ REC[ORD] Indicator (☞ pg. 16)
④ NTSC Indicator (☞ pg. 24)
⑤ Tape Speed Indicator (☞ pg. 16)
⑥ Audio Mode Indicator* (☞ pg. 15)
⑦ "Cassette Loaded" Mark
⑧ Counter Memory Indicator (☞ pg. 13)
⑨ "TIMER" Indicator (☞ pg. 21)
⑩ Clock/Counter/Channel Display (☞ pg. 6)

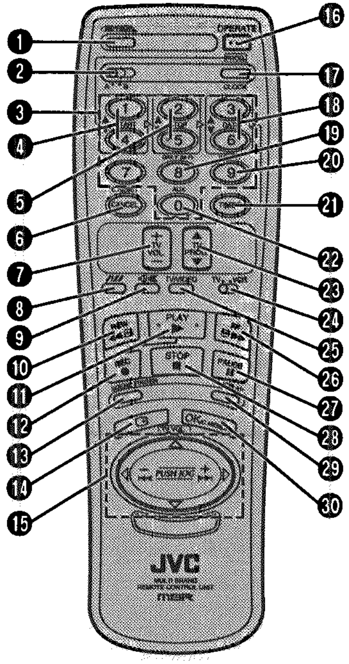
* Available with HR-E639EE only.

REAR VIEW



① Mains Power Cord (☞ pg. 3)
② AUDIO and VIDEO IN Connectors (☞ pg. 22)
* The HR-E539EE has only one Audio input connector.
③ ANT. IN Connector (☞ pg. 3)
④ RF Output Channel Adjustment Screw (☞ pg. 4)
⑤ Remote PAUSE Connector (☞ pg. 23)
⑥ AUDIO and VIDEO OUT Connectors (☞ pg. 3)
* The HR-E539EE has only one Audio output connector.
⑦ TEST Switch (☞ pg. 4)
⑧ SYSTEM Swich (☞ pg. 4)
⑨ RF OUT Connector (☞ pg. 3)

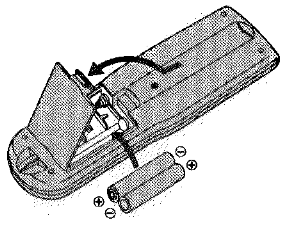
REMOTE CONTROL



❶ REVIEW Button (☞ pg. 13)
❷ A/B CODE Switch (☞ pg. 15)
❸ NUMBER Keys (☞ pg. 16)
❹ START ▲/▼ Buttons ☞ pg. 9)
❺ STOP ▲/▼ Buttons (☞ pg. 9)
❻ CANCEL Button (☞ pg. 21)
C.RESET Button (☞ pg. 13)
❼ TV VOL. +/– Button (☞ pg. 26)
❽ SP/LP/EP Button (☞ pg. 12)
DIGIT ENTRY Button (☞ pg. 26)
❾ AUDIO MONITOR Button (☞ pg. 15)
TV MUTE Button (☞ pg. 26)
❿ Rewind [REW] Button (☞ pg. 10)
⓫ PLAY Button (☞ pg. 10)
⓬ RECORD Button (☞ pg. 16)
⓭ SCENE FINDER Button (☞ pg. 14)
⓮ OSD (⊡) Button (☞ pg. 5)
⓯ PUSH JOG Button (☞ pg. 11)
⓰ OPERATE Button (☞ pg. 4)
⓱ PROG Button (☞ pg. 20)
CLOCK Button (☞ pg. 9)
⓲ DATE ▲/▼ Buttons (☞ pg. 9)
⓳ DAILY Button (☞ pg. 21)
⓴ WEEKLY Button (☞ pg. 21)
㉑ TIMER Button (☞ pg. 21)
㉒ AUX Button (☞ pg. 22)
㉓ TV PROG. ▲/▼ Buttons (☞ pg. 5)
㉔ TV/VCR Switch (☞ pg. 26)
㉕ TV/VIDEO Button (☞ pg. 26)
㉖ Fast Forward [FF] Button (☞ pg. 10)
㉗ PAUSE Button (☞ pg. 11)
㉘ STOP Button (☞ pg. 10)
㉙ DISPLAY Button (☞ pg. 17)
㉚ OK Button (☞ pg. 5)
C.MEMORY Button (☞ pg. 13)

Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6/UM-3"-size batteries (provided) in the correct directions.
3. Replace the cover.



How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands (☞ pg. 26).

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

NOTE:

If for some reason the remote control doesn't work properly, remove its batteries, wait a short time and then try again.

SPECIFICATIONS

GENERAL

Power requirement	
Rating	: AC 110 – 240 V∿, 50/60 Hz
Operating	: AC 90 – 260 V∿, 50/60 Hz
Power consumption	: 24 W (E639EE) 20 W (E539EE)
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 426 x 94 x 341 mm
Weight	: 4.5 kg
Format	: VHS standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM) : 160 min. with T-160 video cassette (NTSC)
(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal,625 lines 50 fields : NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines (PAL/MESECAM) : 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)[E639EE only]
Input/Output	: RCA connectors (IN x 2, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 48 positions (+AUX position "AU")
Tuning system	: Voltage synthesized tuner
Channel coverage	: VHF (Low) 42 – 153MHz (High)153 – 470MHz UHF 470 – 870MHz
Aerial output	: UHF channels (Adjustable E32 – E40)
Memory backup time	: Approx. 18 hours.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6/UM-3" battery x 2

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

Precautions

Failure to heed the following precautions may result in damage to the recorder, remote control or video cassette.

1. **DO NOT place the recorder . . .**
   - ... in an environment prone to extreme temperatures or humidity.
   - ... in direct sunlight.
   - ... in a dusty environment.
   - ... in an environment where strong magnetic fields are generated.
   - ... on a surface that is unstable or subject to vibration.
2. **DO NOT block the recorder's ventilation openings.**
3. **DO NOT place heavy objects on the recorder or remote control.**
4. **DO NOT place anything which might spill on top of the recorder or remote control.**
5. **AVOID violent shocks to the recorder during transport.**

MOISTURE CONDENSATION

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder turned on for a few hours to let the moisture dry.

ABOUT HEAD CLEANING

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend,route and dress the flat cables as they were originally laid.

① Top cover
↓
② Bottom cover
↓
③ Front panel assembly
↓
④ SW/JACK & DISPLAY board assemblies
↓
⑤ Cassette housing assembly
↓
⑥ Shield Case
↓
⑦ DRUM assembly
↓
⑧ Main deck assembly
↓
⑨ Main board assembly

1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	5(S1),SIDE PANEL(L,R)	
②	BOTTOM COVER	D2	(S2), 7(L1)	
③	FRONT PANEL ASSEMBLY	D3	7(L2), *JOG/SHUTTLE	<NOTE1>
④	SW/JACK & DISPLAY BOARD ASSEMBLIES	D4	13(L3),*CN1201 *CN1202	<NOTE2>
⑤	CASSETTE HOUSING ASSEMBLY	D5	2(S3) ,2(S4)	<NOTE3>
⑥	SHIELD CASE	D6	2(S5),*CN1	
⑦	DRUM ASSEMBLY	D7	3(S6),WR1,(L5)	<NOTE4>
⑧	MAIN DECK ASSEMBLY	D8	2(S7),WR2, WR3,2(L4),*CN703	<NOTE5>
⑨	MAIN BOARD ASSEMBLY	D9	3(S8)	
↑ (1)	↑ (2)	↑ (3)	↑ (4)	↑ (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig.No. showing procedure or part location
(4) Indentification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, * = Unhook,unlock, release,unplug or unsolder.
(5) Adjustment information for installation

<NOTE1>
When reattaching the front panel assembly, make sure that the door opener (ⓐ) of the cassette housing assembly is lowered in position prior to the reinstallation.

<NOTE2>
When plugging the connector in, check that the flat wire is inserted properly and fully.

<NOTE3>
When reattaching the cassette housing assembly, pay careful attention to the switch lever not to make it touch the REC switch knob of the REC SAFETY board assembly from the upside.
(If the REC switch knob of the REC SAFETY board assembly is damaged, cassette loading is impossible.)

<NOTE4>
When plugging the connector in, check that the flat wire is inserted properly and fully.

<NOTE5>
- When removing the Main deck assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Main deck assembly.
- When reattaching the Main deck assembly to the Main board assembly, make sure to set the spacers into the retaining slots respectively.

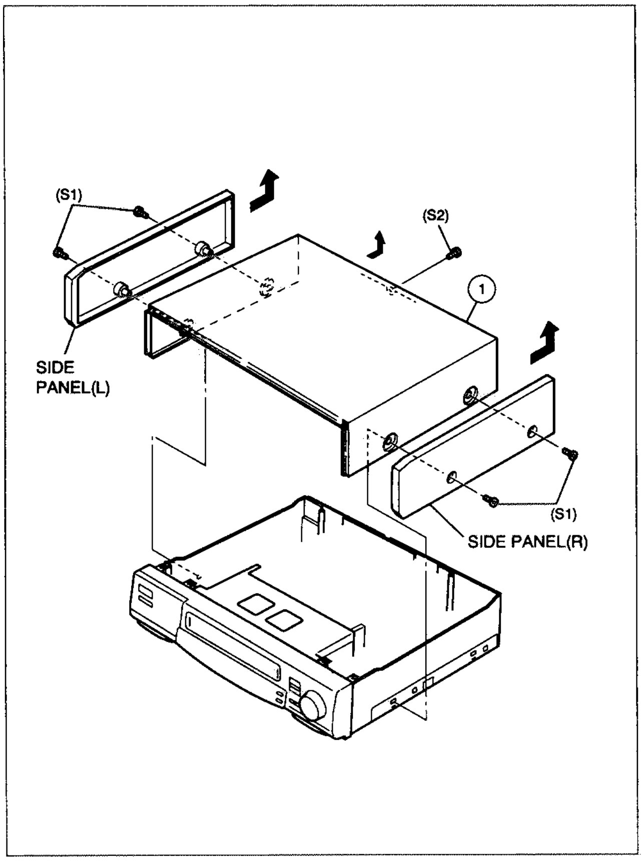

(S1)
(S2)
1
SIDE PANEL(L)
(S1)
SIDE PANEL(R)

Fig. D1

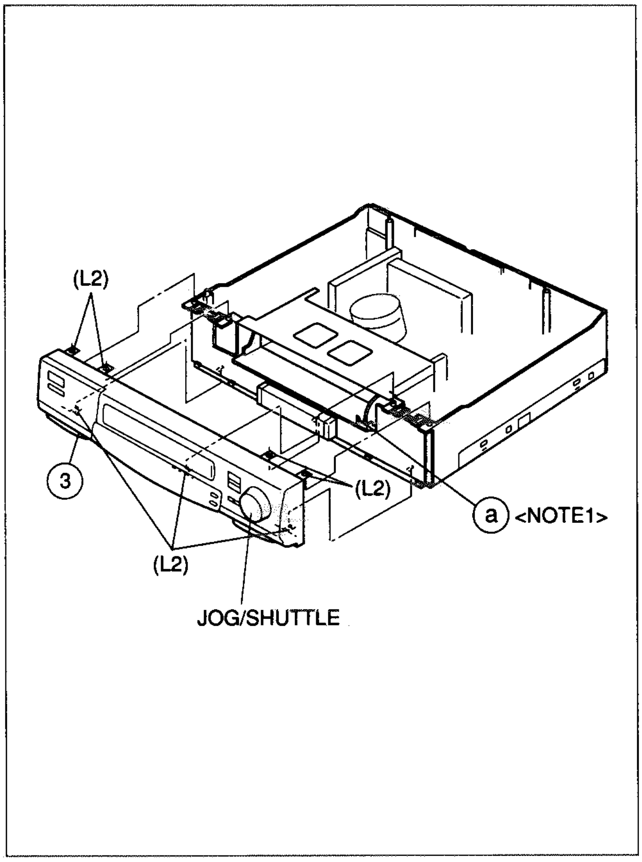

(L2)
3
(L2)
(L2)
a <NOTE1>
JOG/SHUTTLE

Fig. D3

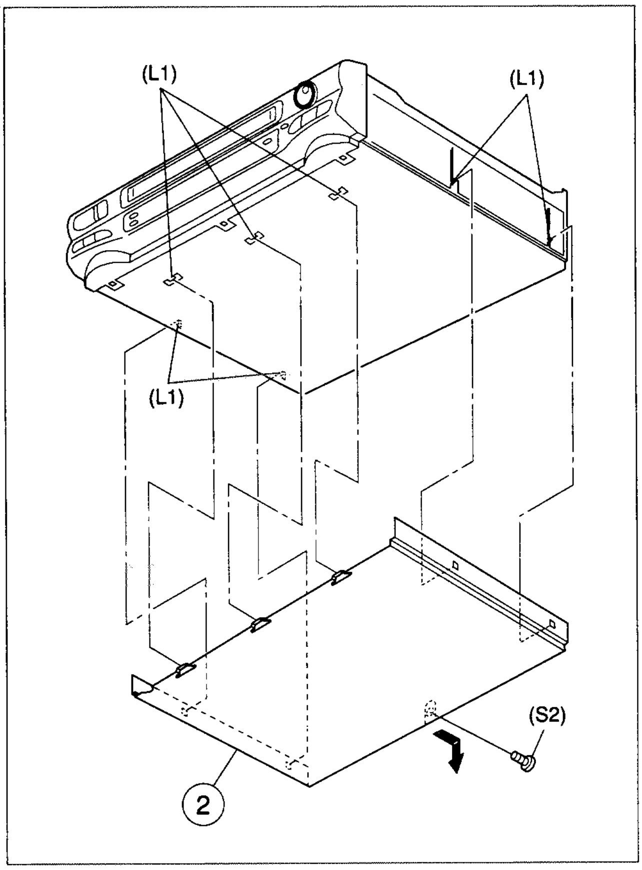


Fig. D2

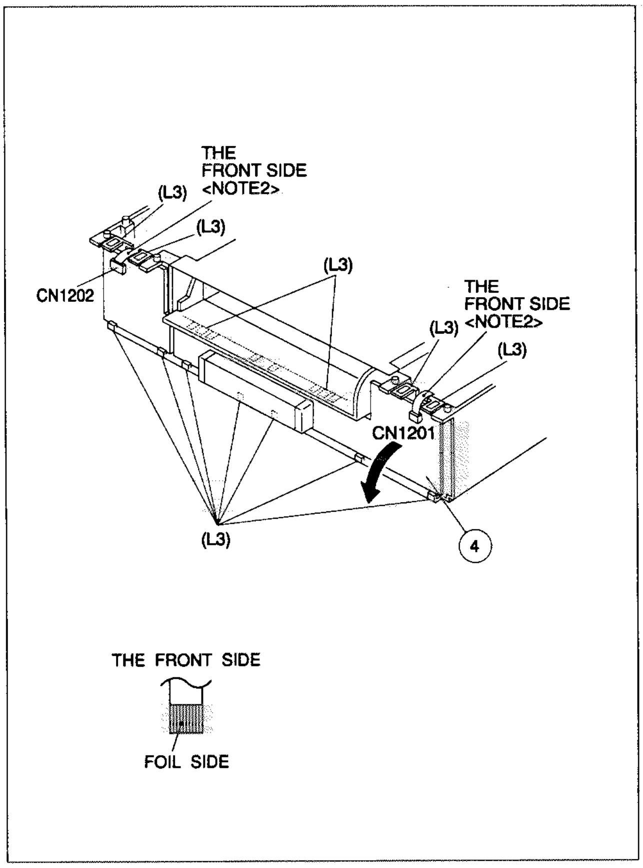

THE FRONT SIDE <NOTE2>
(L3)
(L3)
CN1202
(L3)
THE FRONT SIDE <NOTE2>
(L3)
(L3)
CN1201
(L3)
4
THE FRONT SIDE
FOIL SIDE

Fig. D4

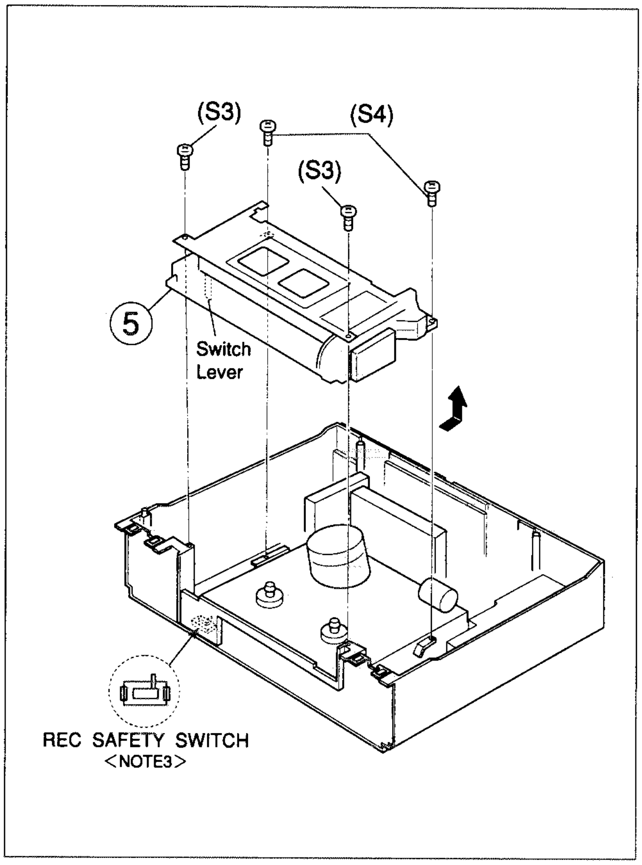

(S3)
(S4)
(S3)
5
Switch Lever
REC SAFETY SWITCH
<NOTE3>

Fig. D5

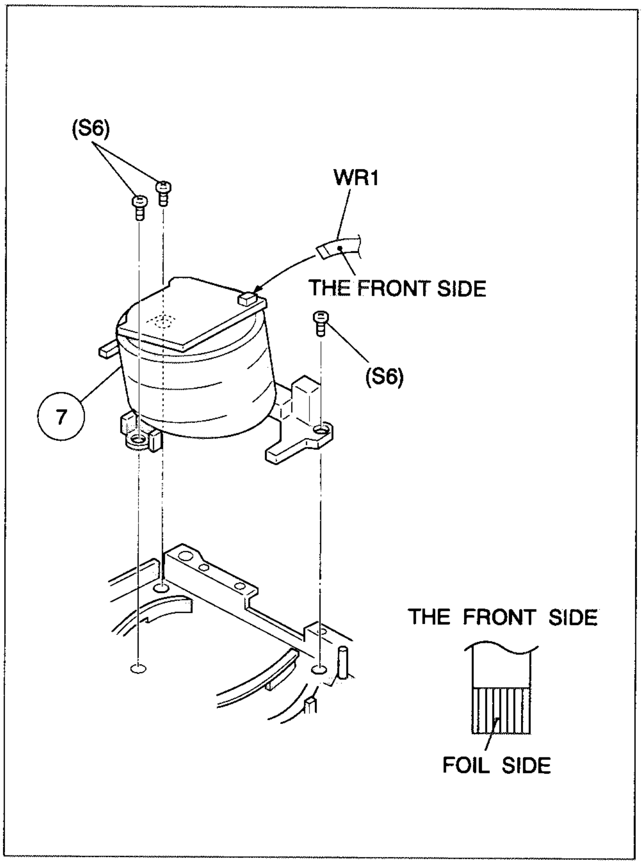

(S6)
WR1
THE FRONT SIDE
(S6)
7
THE FRONT SIDE
FOIL SIDE

Fig. D7

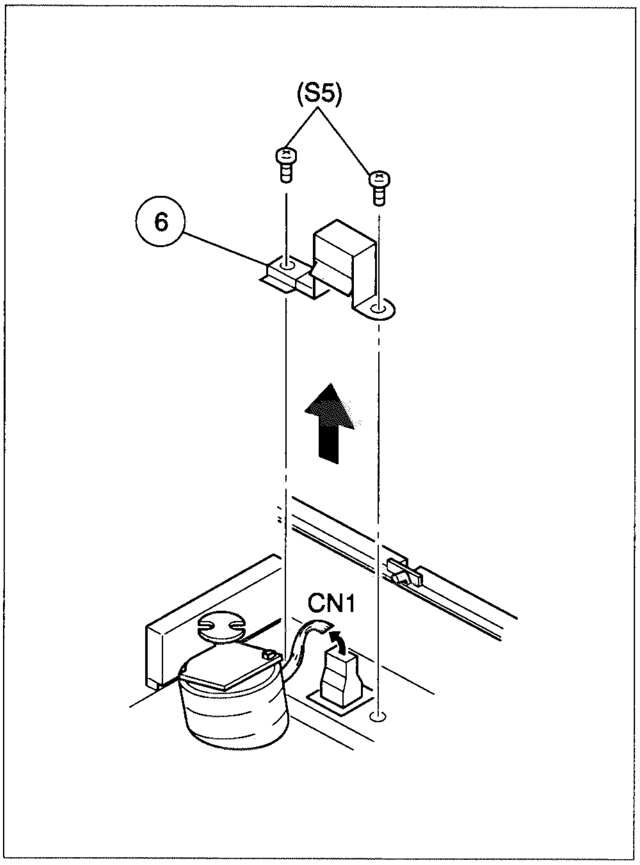


Fig. D6

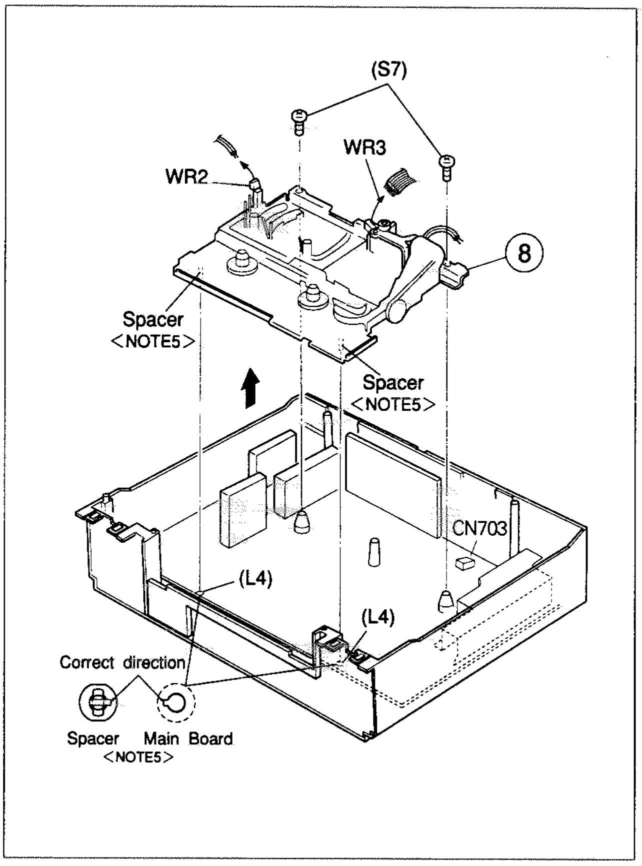

(S7)
WR2
WR3
8
Spacer
<NOTE5>
Spacer
<NOTE5>
CN703
(L4)
(L4)
Correct direction
Spacer
Main Board
<NOTE5>

Fig. D8

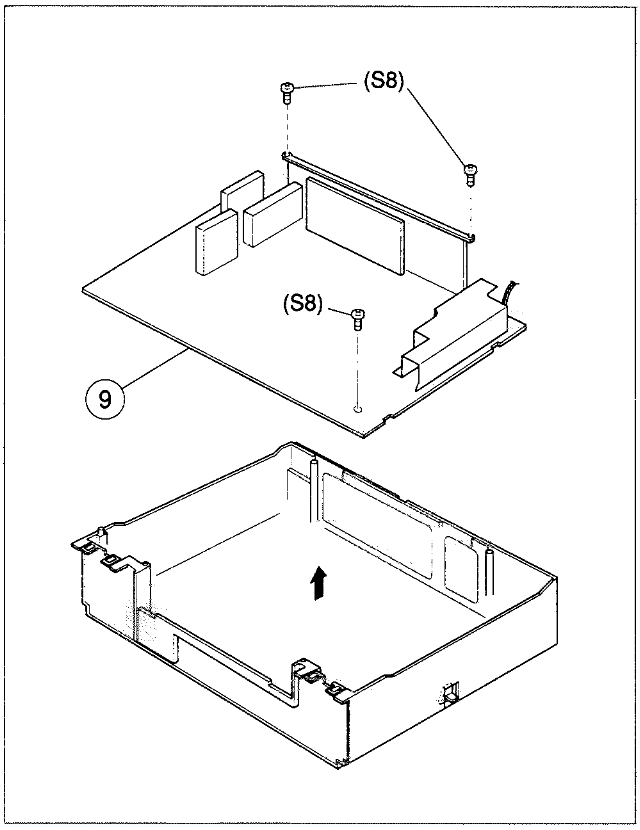


Fig. D9

1.3 CASSETTE HOUSING INSTALLATION

NOTE: *Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.*

1. Check that the hole of the control cam are aligned to the deck hole. If necessary, turn the loading motor belt by hand to adjust the position.

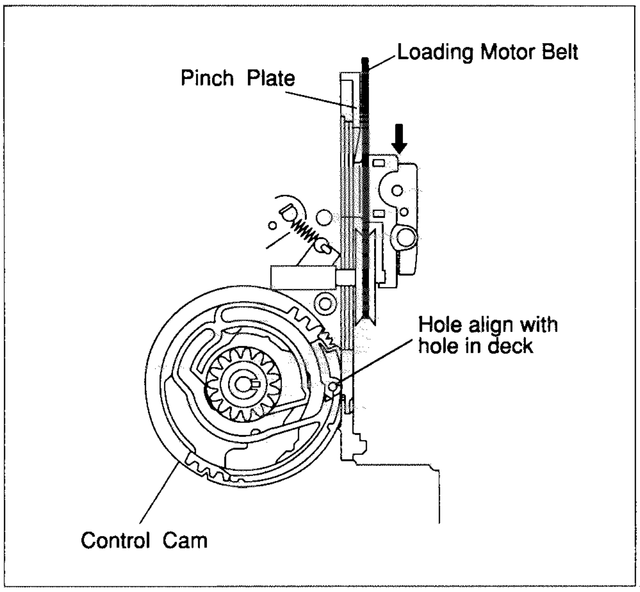


Fig. 1-3-1

1.4 SERVICE POSITION

1.4.1 How to take out the Mechanism and Main board assemblies.

(1) Remove the Top cover, Front panel assembly, CN1201 of the DISPLAY board assembly and CN1202 of the SW/JACK board assembly.

(2) Take out 5 screws Ⓐ , 2 screws Ⓑ and 1 screw Ⓒ as shown in Fig.1-4-1.

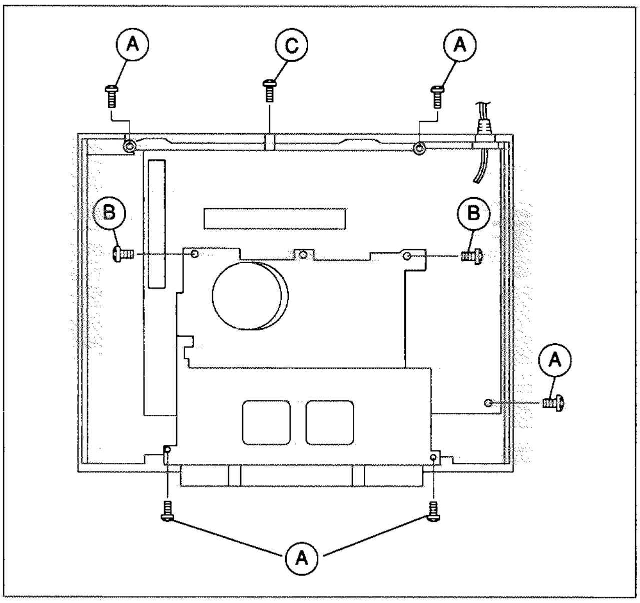


Fig. 1-4-1

(3) Remove the Mechanism assembly (including Cassette housing) and Main board assembly out of the chassis as shown in Fig. 1-4-2.

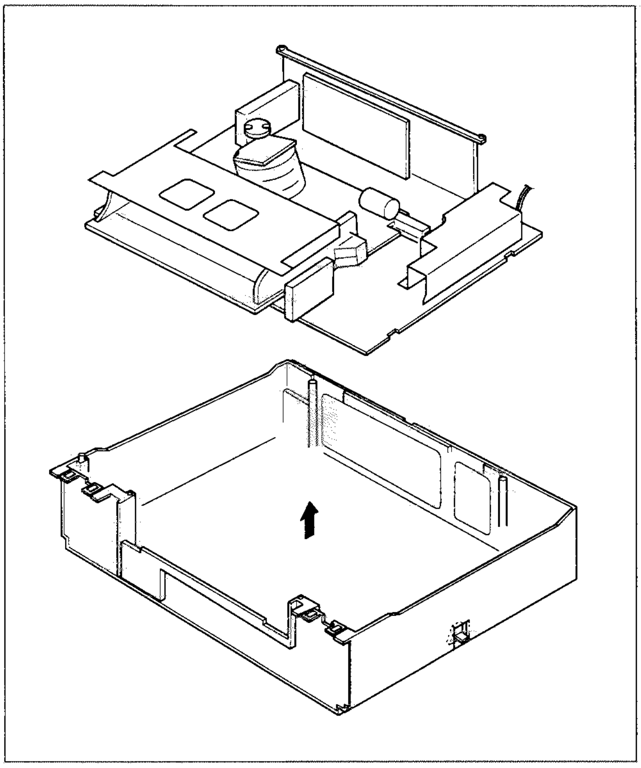


Fig. 1-4-2

(5) Turn over the Mechanism assembly and Main board assembly then connect CN1201 of the DISPLAY board assembly.

(6) Carry out checks & repairs as necessary as shown in Fig.1-4-3.

Note: *When input the AUDIO/VIDEO signal from connector, connect CN1202 of the SW/JACK board assembly.*

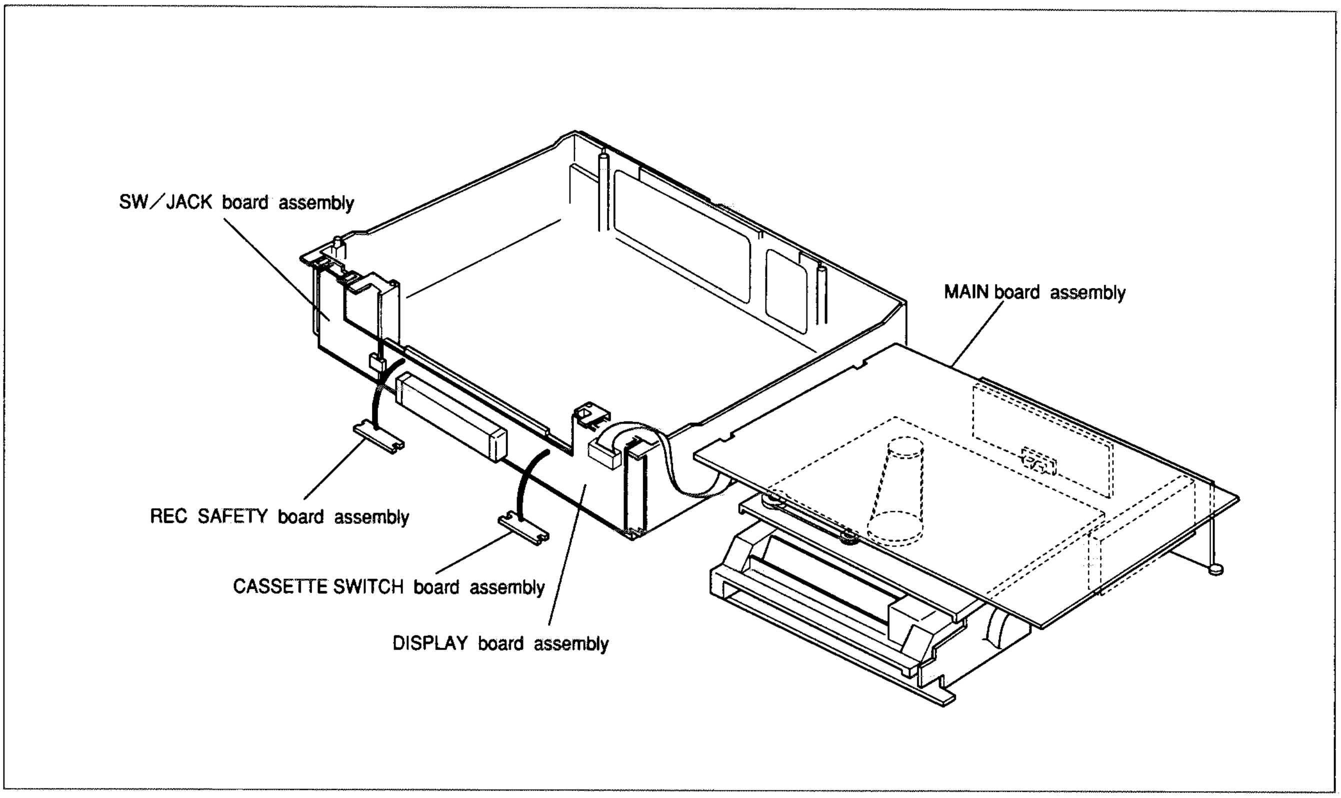


Fig. 1-4-3

1.4.2 Cautions on cassette loading when mechanism is in service position

The REC SAFETY board assembly of this set serves both for detecting the safety tab (erasure prevention tab) of a cassette and detecting a cassette loaded. Therefore, cassette loading in the condition that the mechanism is disassembled from the set needs manual operation of the switches of the REC SAFETY board assembly and the CASSETTE SWITCH board assembly.

1.4.3 Cassette loading and ejecting procedures when mechanism is in service position

(1) Insert a cassette tape halfway into the cassette housing assembly.

(2) Press the switch of the REC SAFETY board assembly to turn on.

(3) When the cassette loading begins and the cassette goes down to the bottom, immediately press the switch of the REC SAFETY board assembly to turn off and hold the status that the switch of the CASSETTE SWITCH board assembly is turned on. (Fix the switch with adhesive tape or put a screwdriver, etc. on it to leave the switch in the ON status.)

(4) In this status, desired operations (recording, playback, fast forward, rewind, etc.) can be performed.

Note: *When the mechanism is in the service position, the safety tab of cassette tape is not detected and recording on cassette tapes without safety tab is possible. Therefore, carefully choose a cassette tape for operation in this mode so as to avoid using cassette tapes of important recording.*

(5) For ejecting the cassette in this status, do it in the reverse order of cassette loading mentioned above.

Note: *If the manual operation REC SAFETY switch timing is incorrect, the cassette may be completely or partially ejected, and the cassette is often ejected incompletely. In such a case, it is possible to take out the cassette by hand.*

If it is desired to load a cassette again after the cassette is ejected in the above procedure, make sure to set the tray of the cassette housing assembly in the frontmost position prior to loading the cassette once again.

1.4.4 Opening on the chassis.

The chassis assembly has openings for easy access to the checkpoints and connector pins as shown in Fig.1-4-4.

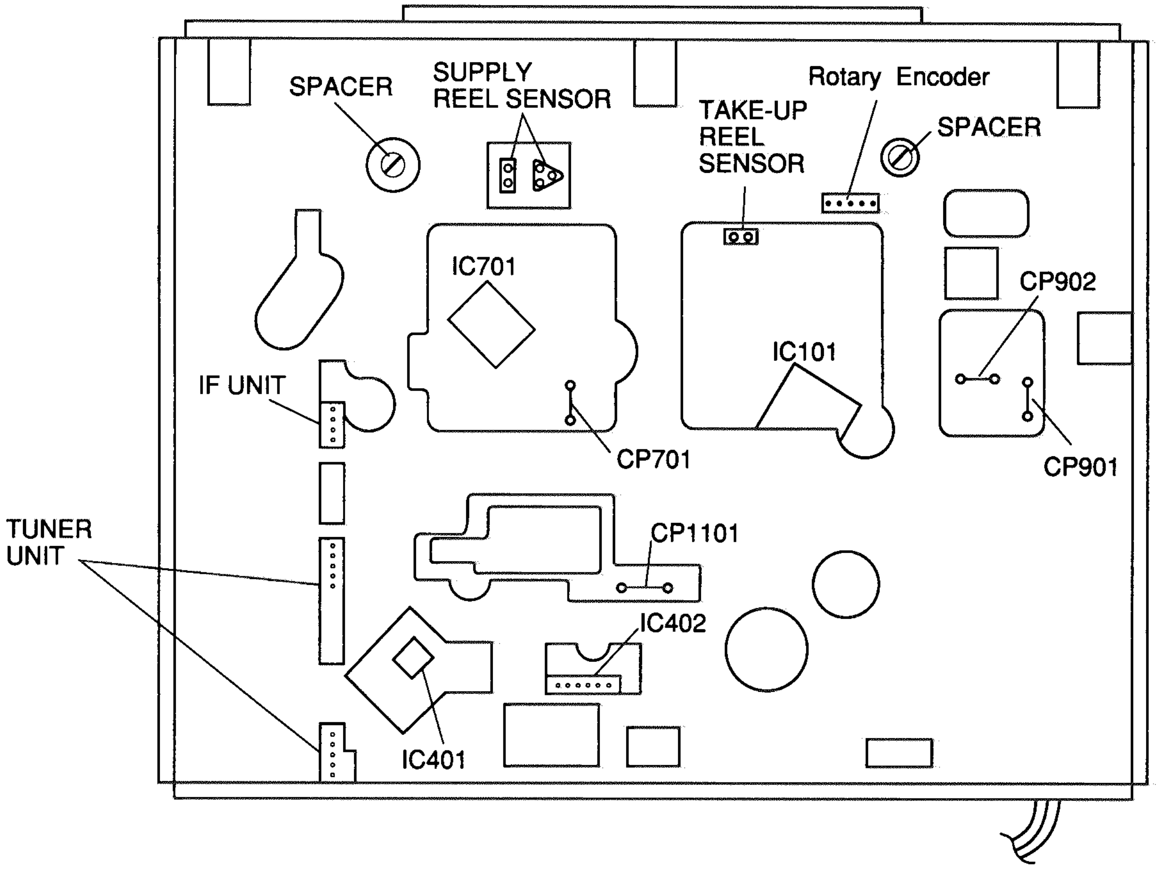

SPACER
SUPPLY REEL SENSOR
Rotary Encoder
TAKE-UP REEL SENSOR
SPACER
IC701
CP902
IC101
IF UNIT
CP701
CP901
TUNER UNIT
CP1101
IC402
IC401

Fig. 1-4-4

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Remove the Top cover, Front panel assembly and cassette housing assembly. (See Page 1-2, 1-3)
(3) Connect TP1202 (GND) and TP1201 (TEST) on the DISPLAY board assembly with a jump wire.
(4) Connect VCR to AC.
(5) Press the POWER button.
(6) Select the desired operation modes with the operation buttons or remote controller.

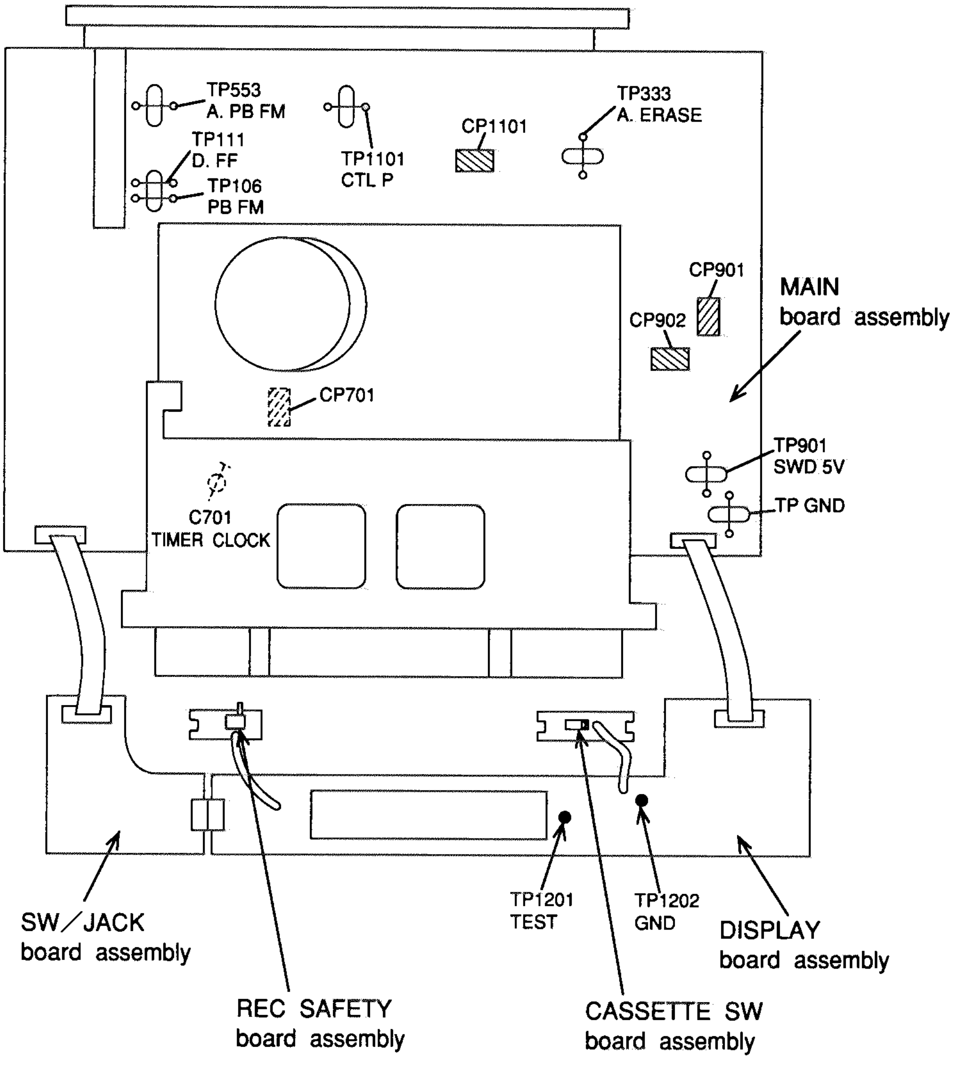

TP553
A. PB FM
TP111
D. FF
TP106
PB FM
TP1101
CTL P
CP1101
TP333
A. ERASE
CP901
CP902
MAIN
board assembly
CP701
TP901
SWD 5V
TP GND
C701
TIMER CLOCK
TP1201
TEST
TP1202
GND
SW/JACK
board assembly
DISPLAY
board assembly
REC SAFETY
board assembly
CASSETTE SW
board assembly

Fig. 1-5-1

1.6 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.6.1 How to display record of an emergency faults

(1) Press "N" button of the presetting unit more than 2 seconds. and the two previous emergency faults are shown in the FDP.
(2) Press "N" button of the presetting unit again when return the normal mode.

[Example] E : 01 : 03
03 — Emergency fault before last
01 — Emergency fault of the last time

[Example] E : — — : — — No record of emergency

1.6.3 How to clear emergency record

Press the C.RESET button on the remote controller in the emergency record display mode,and the record of the emergency fault(s) is cleared.

1.6.2 Detail of emergency faults

FDP	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent(for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 04	DRUM FF input is absent(for more than 3 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP
E : 06	CAPSTAN FG input is absent(for more than 1 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	STOP → POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF

Table 1-6-1 EMERGENCY FAULTS

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

(1) Disconnect VCR from AC power before soldering.
(2) Avoid imparting stress to wires when disengaging connectors.
(3) Determine and correct the cause of difficulty before proceeding to adjustments.Do not disturb settings unnecessarily.
(4) Use care not to damage tabs,claws,etc during repairs.
(5) Install the cassette housing assembly only when the mechanism is in the MECHANISM ASSEMBLING MODE position.
(6) When installing the Front panel assembly,be sure to engage the housing door with the door opener of the cassette housing assembly.
If this is omitted,the cassette door will not open at Eject and the cassette can not be removed. (See SECTION 1 DISASSEMBLY.)

2.1.2 Check without cassette housing assembly.

Mechanism operations can be observed easily by removing the cassette housing assembly. Use the MECHANISM SERVICE MODE. (See SECTION 1 DISASSEMBLY.)

2.1.3 Manual removal of loaded tape

When the deck enters the emergency mode with cassette tape loaded and it can not be ejected by pressing the EJECT button,take out of the cassette tape according to the following procedure.

(1) Disconnect the power cord from AC outlet then take out the Top cover and Front panel assembly.
(2) Turn the loading motor on the Main deck assembly by hand in the unloading direction to where the pole base assembly (supply and take-up) is positioned below the cassette tape.At that time, pay careful attention to the tape not to get soiled with grease.
(3) Take out 4 screws of the cassette housing assembly.(See SECTION 1 DISASSEMBLY.)
(4) Remove the cassette housing with slackened tape and guard panel of cassette.
(5) Wind up the tape by turning the reel hub(either supply or take-up side for convenience) from the bottom of the cassette,and remove the cassette tape.

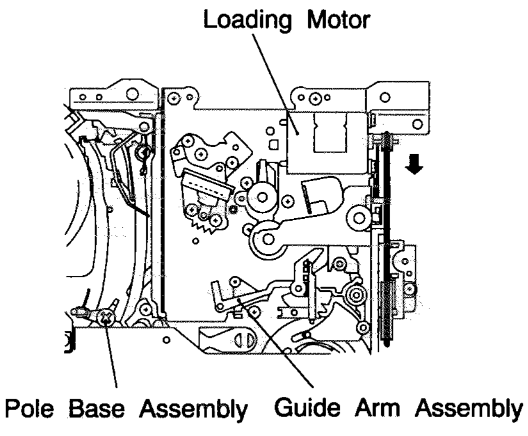


Fig. 2-1-1

2.1.4 Test Equipment

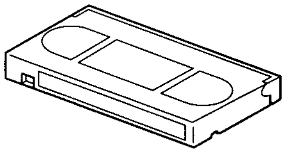
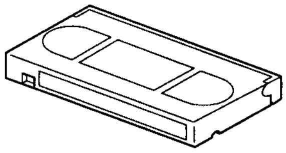
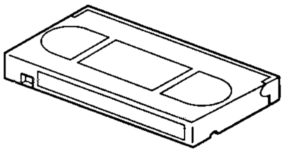
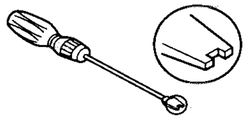
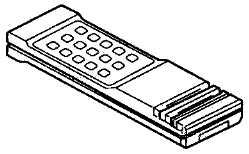
Alignment tape (SP) MHPE	Alignment tape (LP) MHPE-L	Back tension cassette gauge PUJ48076-2	A/C head positioning tool PTU94010
			
Roller driver PTU94002	Presetting unit PTU94008	Grease KYODO-SH-P	
			

Table 2-1-1 Test equipment

2.2 MAIN MECHANISM PARTS

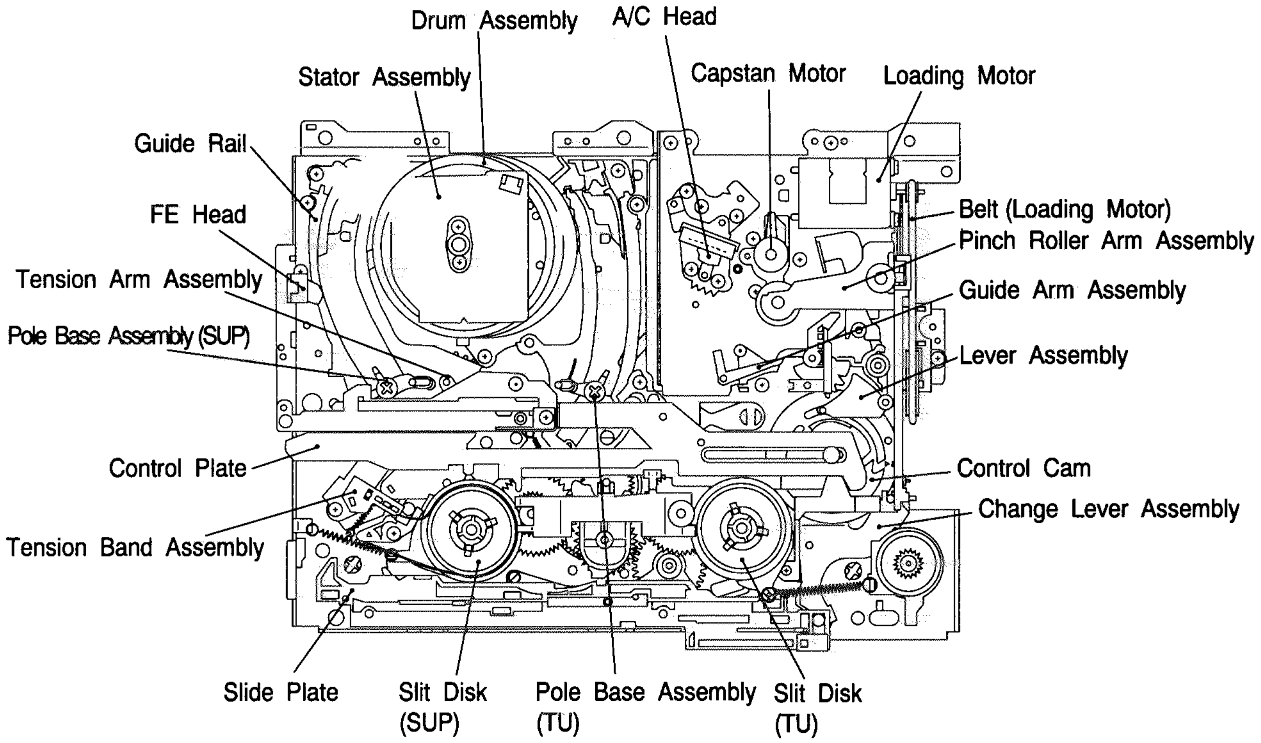

Drum Assembly
A/C Head
Stator Assembly
Capstan Motor
Loading Motor
Guide Rail
FE Head
Tension Arm Assembly
Pole Base Assembly (SUP)
Belt (Loading Motor)
Pinch Roller Arm Assembly
Guide Arm Assembly
Lever Assembly
Control Plate
Control Cam
Change Lever Assembly
Tension Band Assembly
Slide Plate
Slit Disk (SUP)
Pole Base Assembly (TU)
Slit Disk (TU)

Fig. 2-2-1 Top view of main deck

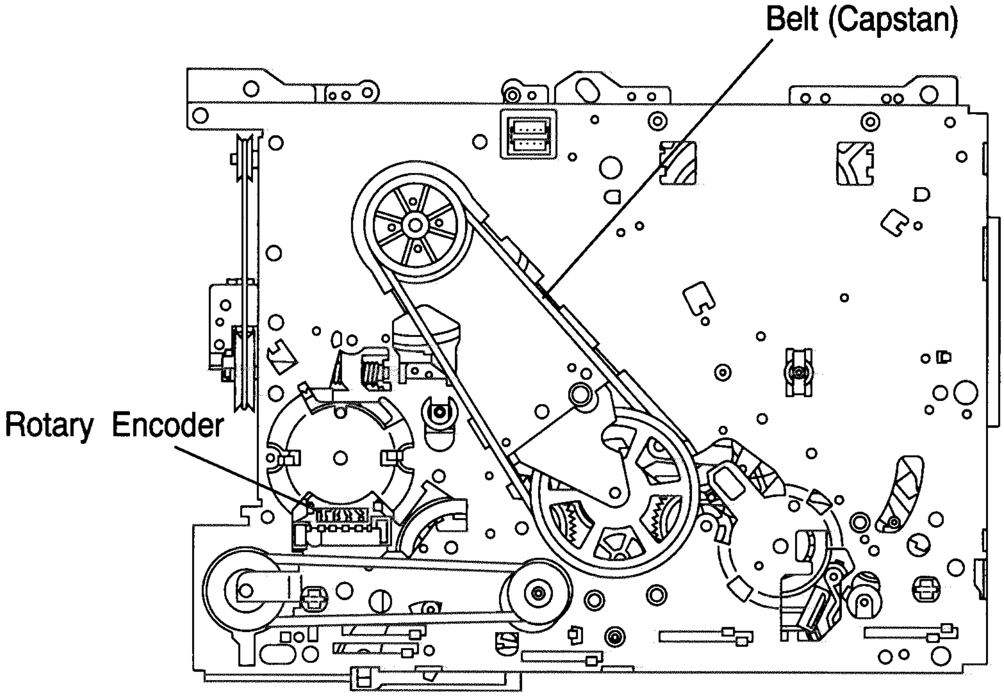


Fig. 2-2-2 Bottom view of main deck

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable,but usually not feasible in practice.Therefore,perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads,tape guides and brush can detract from playback picture quality and in extreme cases,even damage the tape.For cleaning,use a finemesh cotton cloth(about the texture of a white dress-shirt) moistened in alcohol. It is recommended to also clean thetape tension posts and capstan.

- To clean the video heads,press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke,as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenishing. Apply only when replacing lubricated parts(also clean and replace lubrication of mating parts if soiled). For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly. Before oiling,clean with alcohol. Apply one or two drops of oil. Avoid excess oil.

1. Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KYODO-SH-P

Table 2-2-1

2. Grease is not required for a replacement cassette housing assembly,as this has been applied at the factory.

NOTE : *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage.Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum motor assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Slit disk (supply, take-up)		○
	Clutch unit (supply, take-up)		○
	Worm gear assembly		○
	Control plate		○
	Slide plate		○
Other	Brush assembly	★○	★○
	Tension band assembly	○	○
	Rotary encoder		○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 DISASSEMBLY/ASSEMBLY PROCEDURE OF MECHANISM

2.4.1 Precaution before disassembling mechanism

This mechanism has an exclusive operation mode provided for disassembling and installation of the mechanism (MECHANISM ASSEMBLING MODE), and it is suggested to set the mechanism to this mode before disassembly and installation.The exclusive mechanism operation mode is not generally used and becomes available by manual setting only. Then this procedure starts with the condition that the cabinet parts,cassette housing assembly and PRE/REC board assembly have been removed.

2.4.2 How to set the exclusive mechanism operation mode (MECHANISM ASSEMBLING MODE)

(1) Turn the loading motor belt by hand.
(2) Confirm that the hole of the control cam are aligned to the deck hole as shown in Fig.2-4-1.

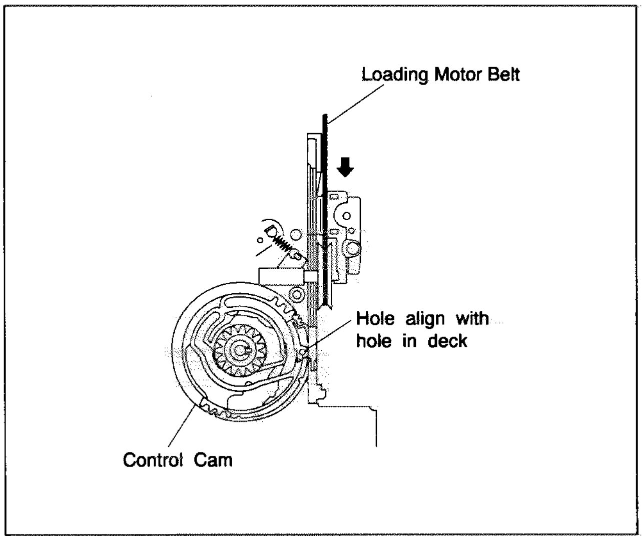


Fig. 2-4-1

2.5 MAIN PARTS REPLACEMENT OF MECHANISM

2.5.1 Pinch Rollar Arm Assembly

(1) Remove the slit washer.
(2) Tilt up the pinch rollar assembly in direction of arrow.

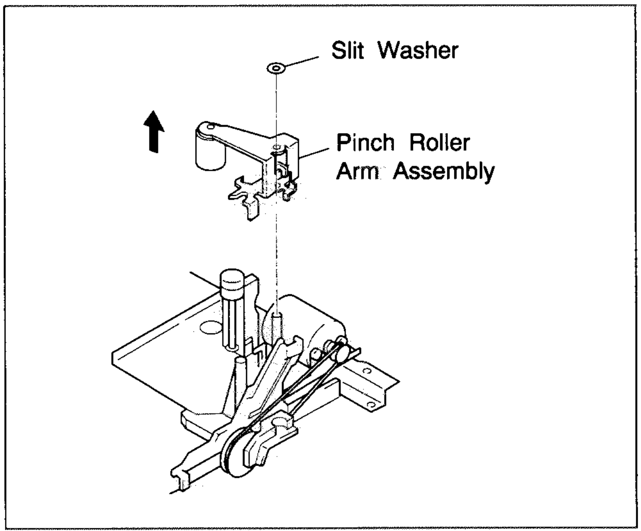


Fig.2-5-1

2.5.2 A/C Head

1. Removal

(1) Take out 2 screws (A).

(2) Remove the A/C head with head base.

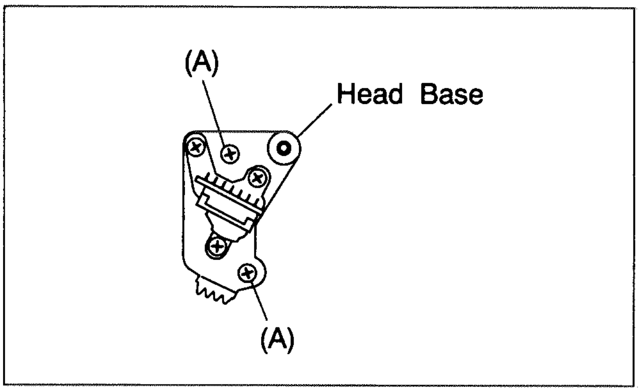

(A)
Head Base
(A)

Fig.2-5-2

(3) When replacing the A/C head only,remove 3 screws (B), use care not to misplace the 3 springs.

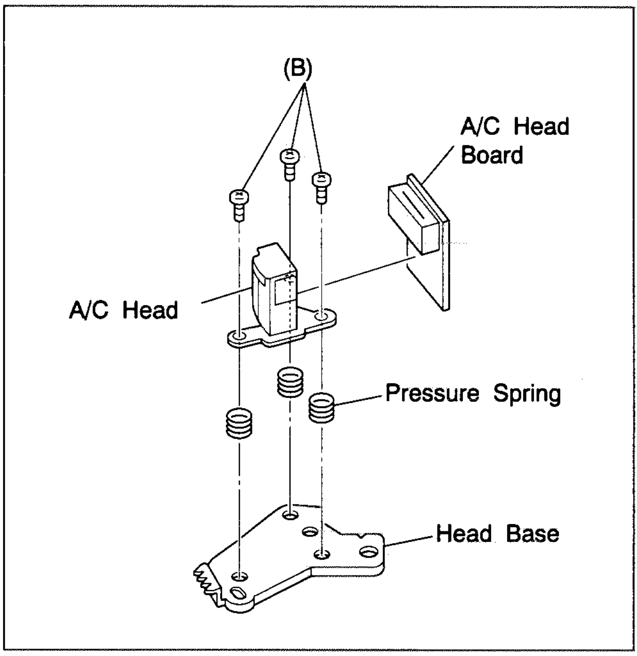
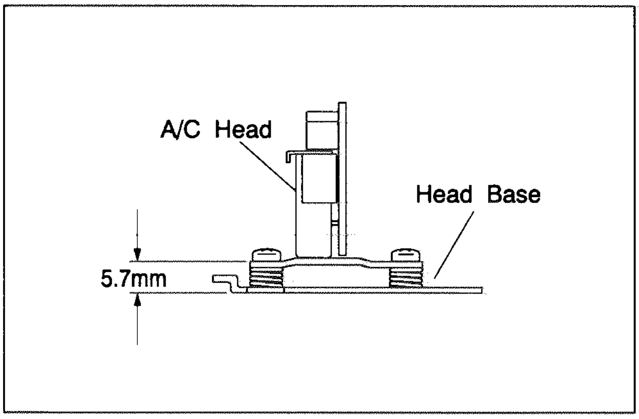

(B)
A/C Head Board
A/C Head
Pressure Spring
Head Base

Fig.2-5-3

2. Installation

(1) Temporarily set A/C head height as indicated in Fig. 2-5-4.


A/C Head
Head Base
5.7mm

NOTES:

- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.5.3 Pinch Plate

1. Removal

(1) Disengage 2 claws, then remove the pinch plate.

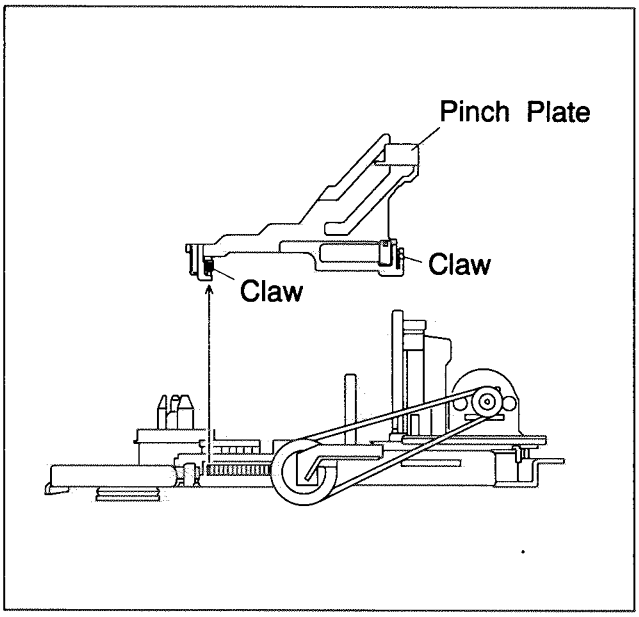

Pinch Plate
Claw
Claw

Fig.2-5-5

2. Installation

(1) When installing pinch plate,align rack of pinch plate and triangle mark of control cam as indicated in Fig.2-5-6.

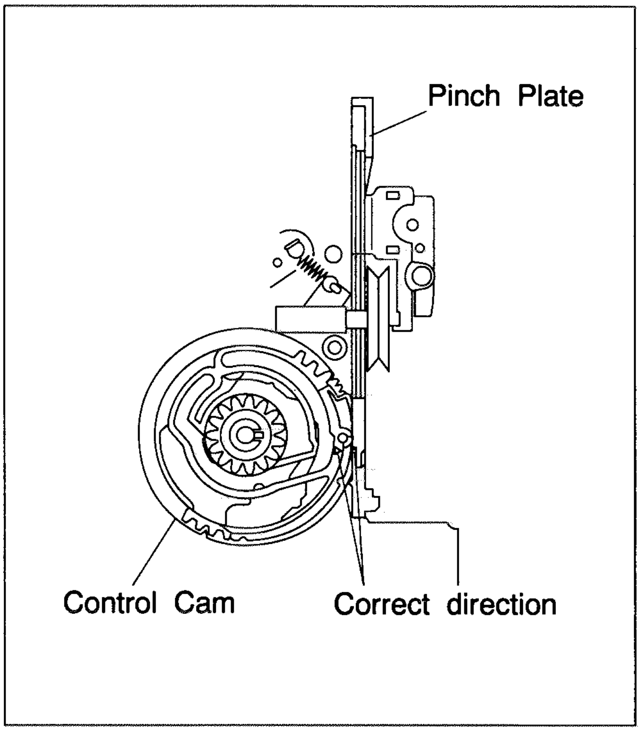

Pinch Plate
Control Cam
Correct direction

Fig. 2-5-6

2.5.4 Mode Motor

(1) Disengage the belt between mode motor and worm gear.
(2) Take out 2 screws (A), then remove the mode motor.

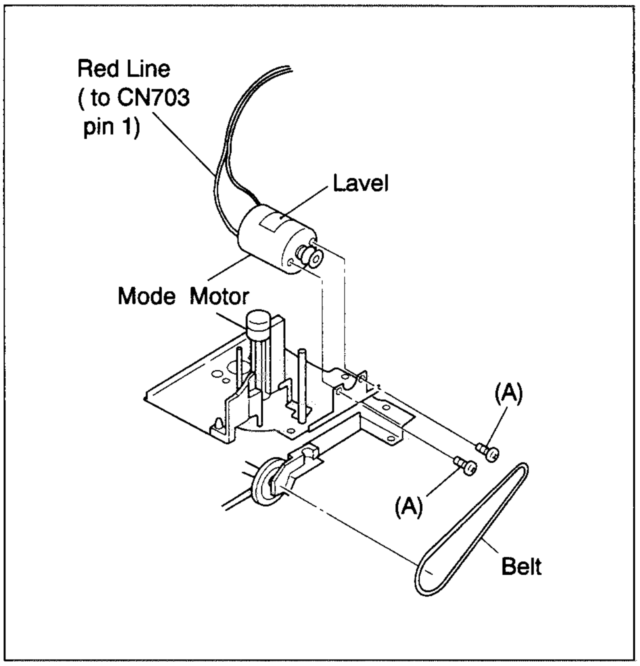

Red Line
(to CN703
pin 1)
Lavel
Mode Motor
(A)
(A)
Belt

Fig.2-5-7

2.5.5 Lever Assmebly,Sub Deck Assembly,Capstan Motor

(1) Take out 1 slit washer,then remove the lever assembly.
(2) Disengage the belt(capstan motor) from bottom of mechanism assembly first as indicated in Fig.2-5-10.
(3) Take out 2 screws (A), 1 screw (B) and remove the sub deck assembly as indicated in Fig.2-5-8.
(4) Take out 3 screws (C) and remove the capstan motor from the sub deck assembly as indicated in Fig.2-5-9.

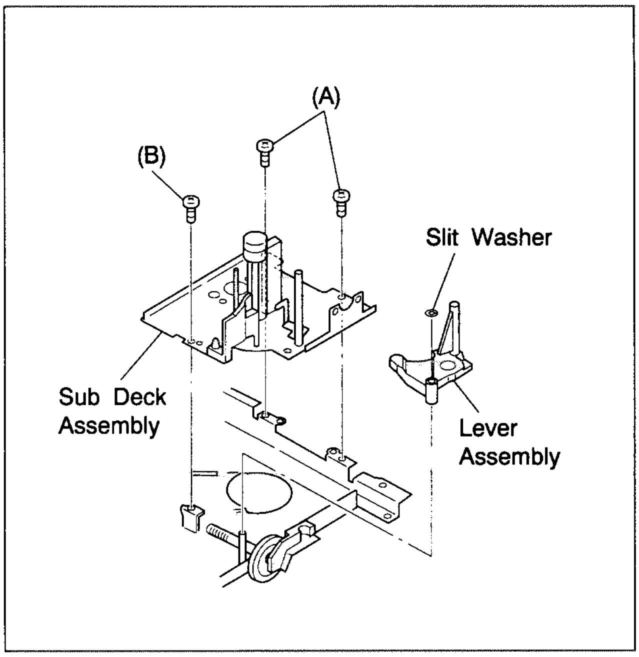

(A)
(B)
Slit Washer
Sub Deck
Assembly
Lever
Assembly

Fig.2-5-8

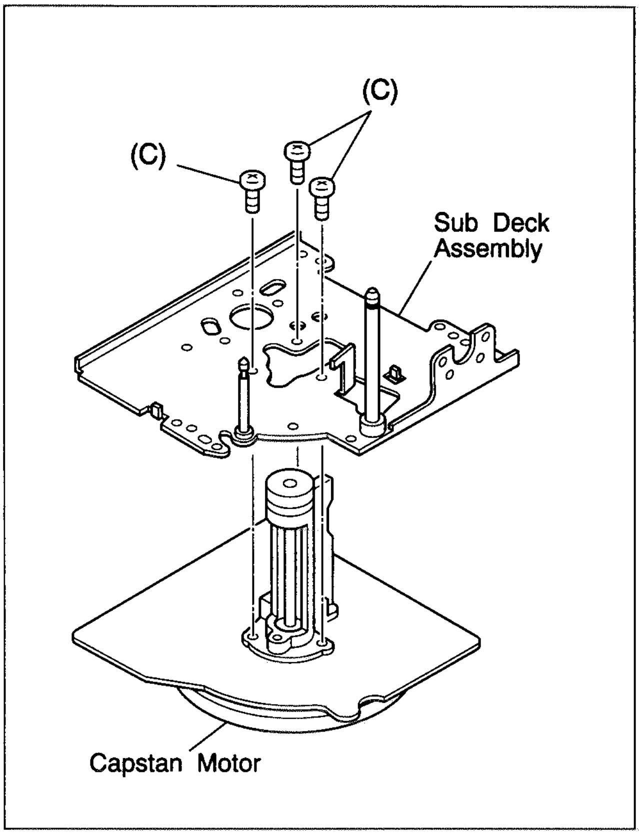

(C)
(C)
Sub Deck
Assembly
Capstan Motor

Fig.2-5-9

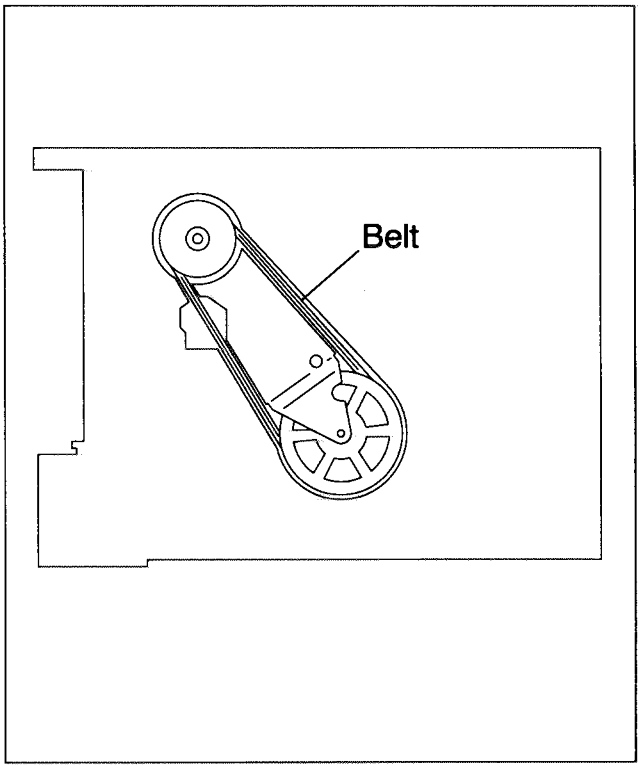


Fig.2-5-10

2.5.6 Control Bracket-1

(1) Take out 1 screw (A) and 1 screw (B).

(2) Remove the control bracket-1.

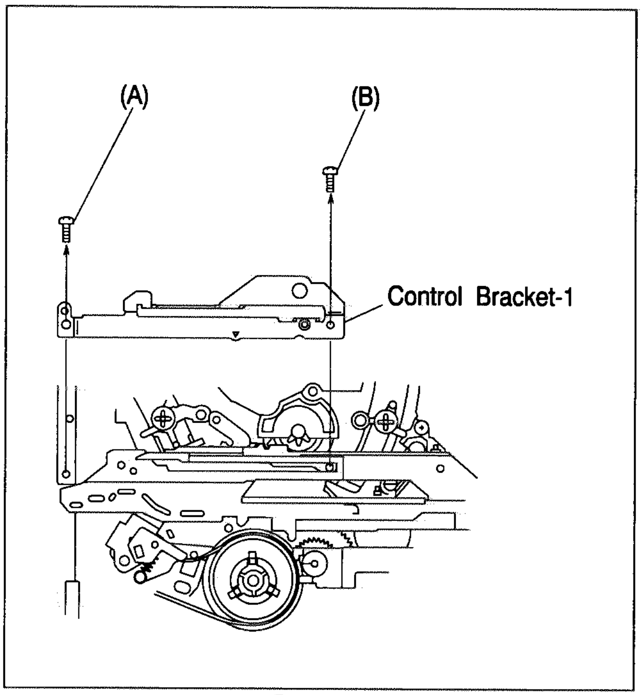

(A)
(B)
Control Bracket-1

Fig.2-5-11

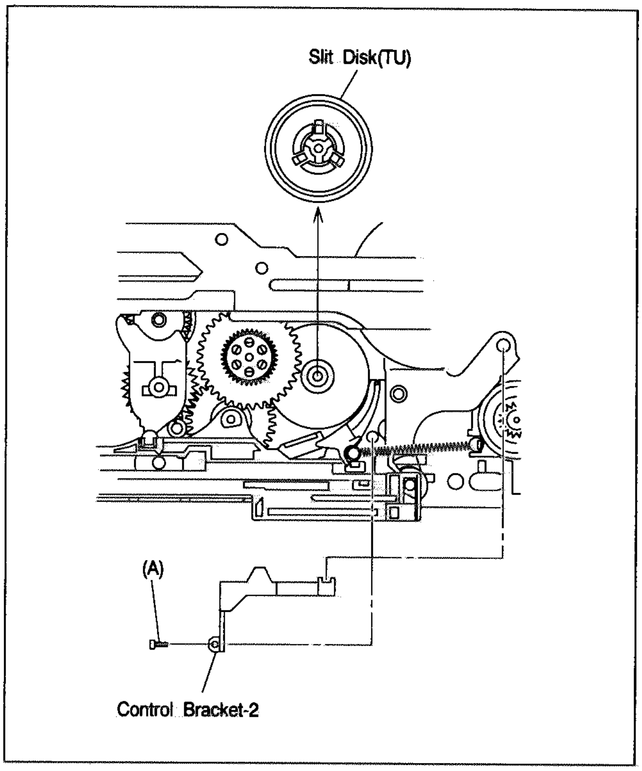

Slit Disk(TU)
(A)
Control Bracket-2

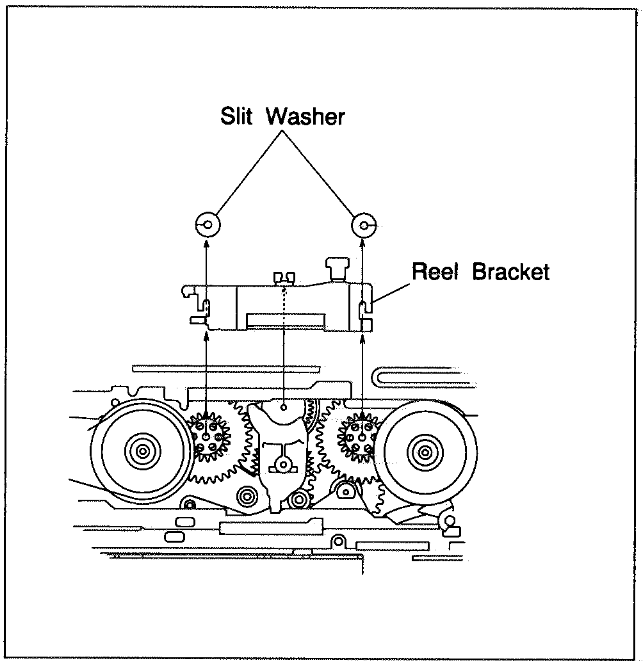
Fig.2-5-13

2.5.7 Reel Bracket,Slit disk (take-up),Control Bracket-2

(1) Take out 2 slit washers.

(2) Remove the reel bracket and slit disk(take-up).

(3) Take out 1 screw (A) and remove the control bracket-2.


Slit Washer
Reel Bracket

2.5.8 Control Plate

(1) Take out 1 slit washer.

(2) Disengage 2 claws and remove the control plate.

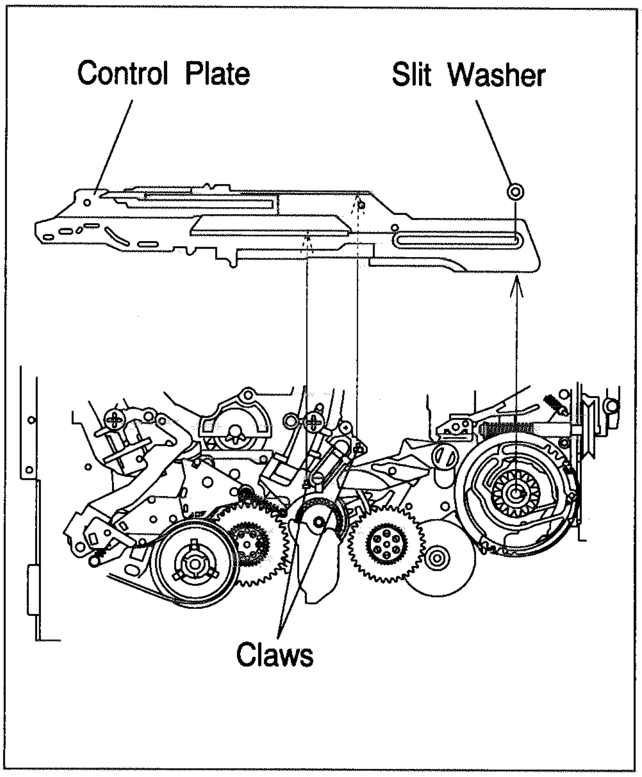

Control Plate
Slit Washer
Claws

Fig.2-5-14

2.5.9 Sub Brake(take-up),Control Cam

(1) Disengage 1 spring (a) and 1 claw then remove the sub brake (take-up).

(2) Disengage 1 claw and remove the control cam.

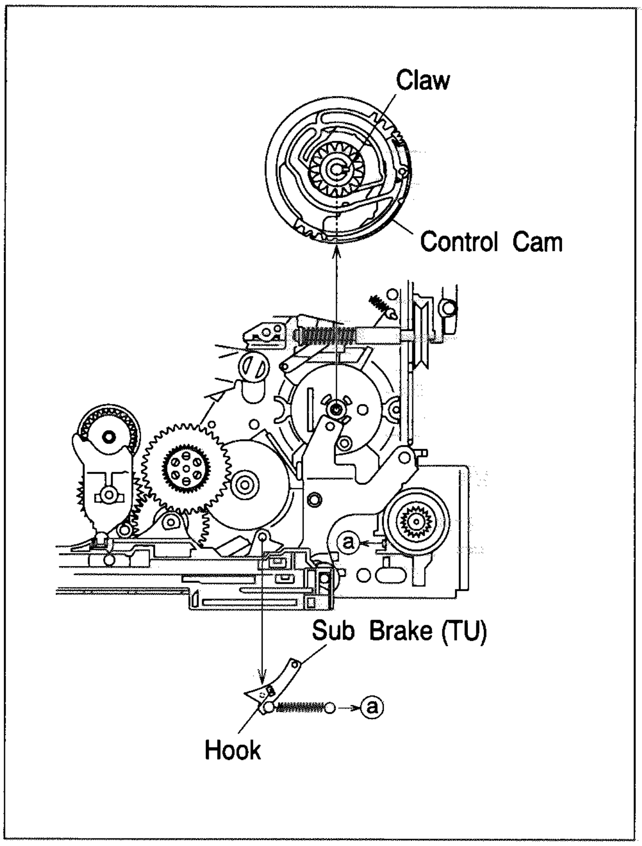

Claw
Control Cam
Sub Brake (TU)
a
a
Hook

Fig.2-5-15

2.5.10 Slide Plate

(1) Disengage 7 claws from bottom of the mechanism assembly and remove the slide plate.

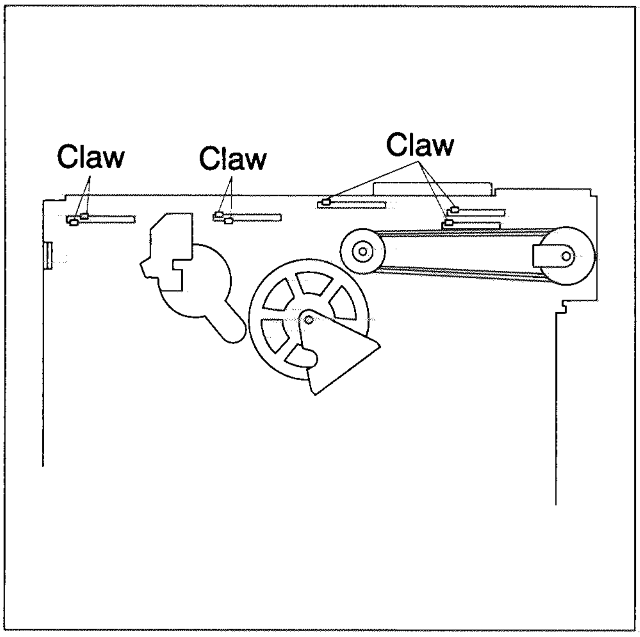

Claw
Claw
Claw

Fig. 2-5-16

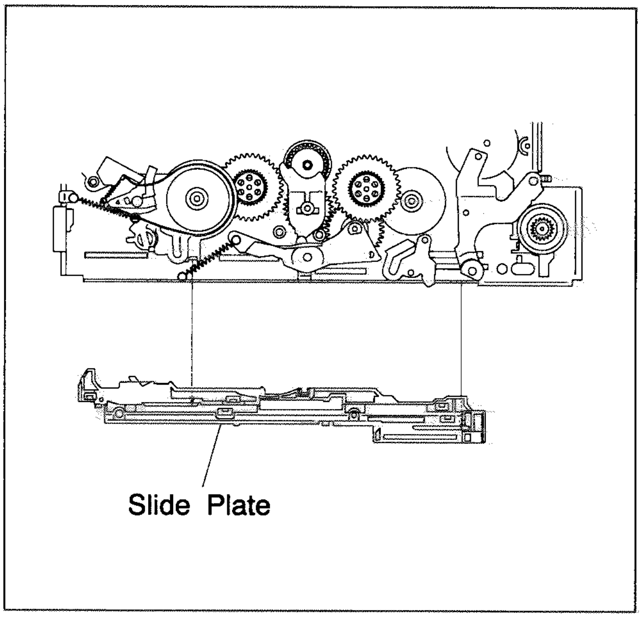

Slide Plate

Fig. 2-5-17

2.5.11 Change Lever,Rotary Encoder

(1) Remove the change lever.

(2) Disengage 2 claws and remove the rotary encoder.

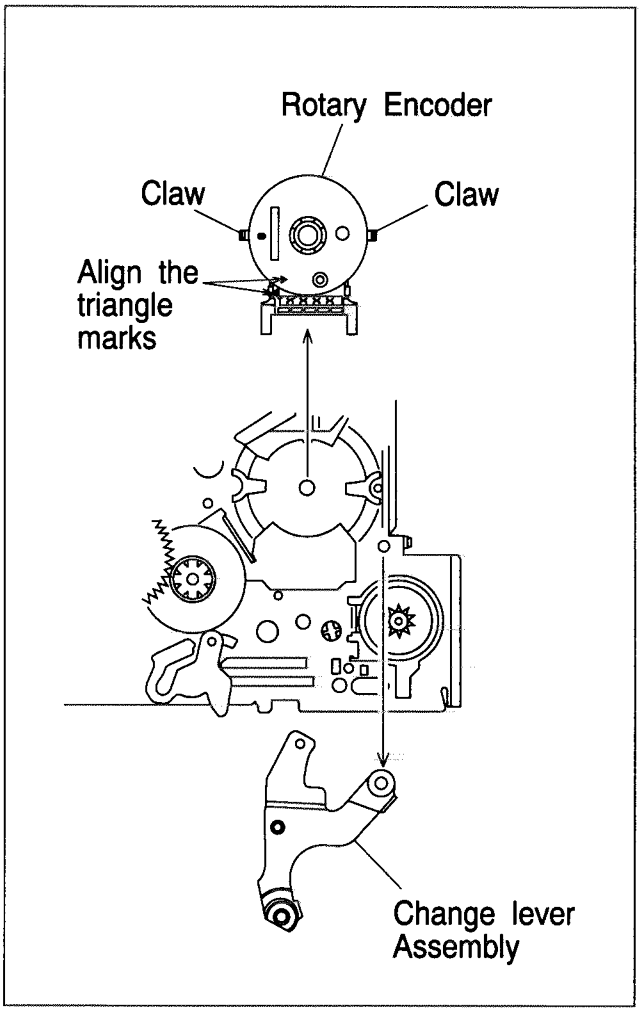

Rotary Encoder
Claw
Claw
Align the triangle marks
Change lever Assembly

Fig. 2-5-18

2.5.12 Sub Brake (supply),Tension Band Assembly,Tension Arm Assembly,Take-up Lever Assembly,Slit Disk(supply)

(1) Disengage 1 spring (a).
(2) Disengage 1 claw and remove the sub brake (supply).
(3) Take out 1 screw (A),spring (c) and slit washer.
(4) Remove the tension arm assembly with tension band assembly.
(5) Disengage 1 spring (b) and remove the take-up lever assembly.
(6) Remove the slit disk(supply).

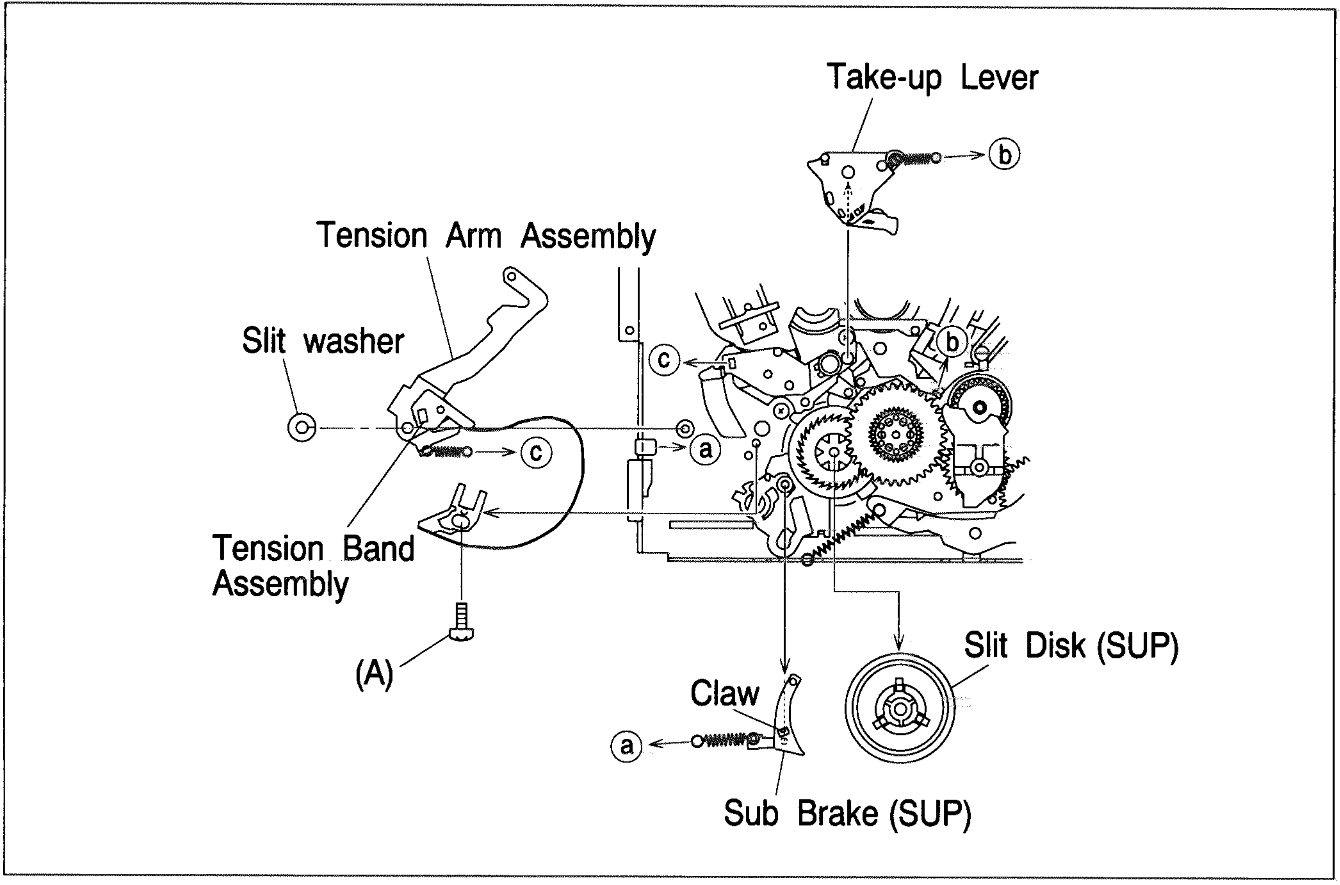

Take-up Lever
ⓑ
Tension Arm Assembly
Slit washer
ⓒ
ⓑ
ⓐ
ⓒ
Tension Band Assembly
(A)
Slit Disk (SUP)
Claw
ⓐ
Sub Brake (SUP)

Fig. 2-5-19

2.5.13 Take-up Head,Tension Arm Lever

(1) Remove the take-up head and tension arm lever.

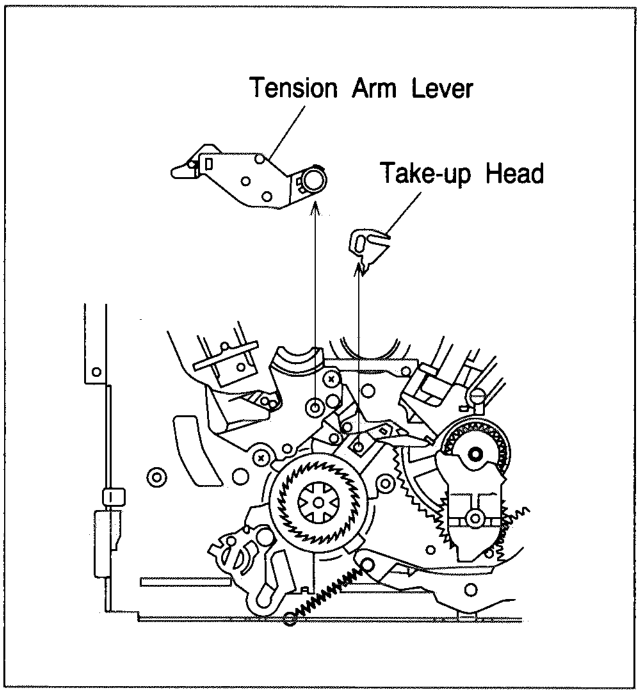

Tension Arm Lever
Take-up Head

Fig.2-5-20

2.5.14 Guide Rail

(1) Take out 5 screws (A) and 1 screw (B).
(2) Disengage 4 claws and remove the guide rail.

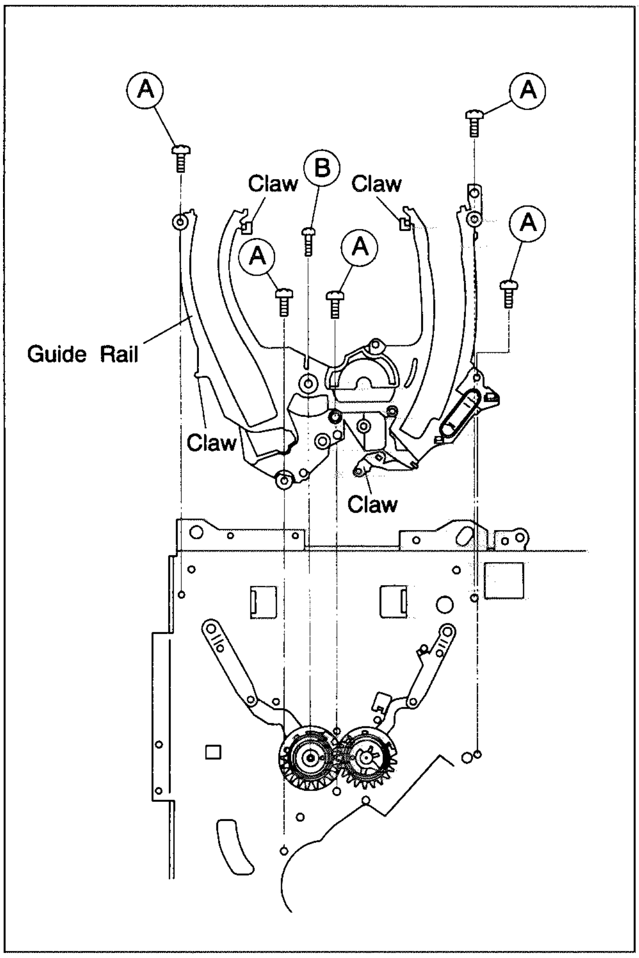

Ⓐ
Ⓐ
Claw
Ⓑ
Claw
Ⓐ
Ⓐ
Ⓐ
Guide Rail
Claw
Claw

Fig. 2-5-21

2.5.15 Stator Assembly

(1) Take out 2 screws (A).
(2) Raise the stator assembly in the direction indicated by the arrow to remove it.
(3) Remove the flat cable.
(4) To reinstall,first secure the flat cable,then insert 2 screws (A).
(5) After reinstalling, be sure to perform PB switching point adjustment(See SECTION 3 ELECTRICAL ADJUSTMENT).

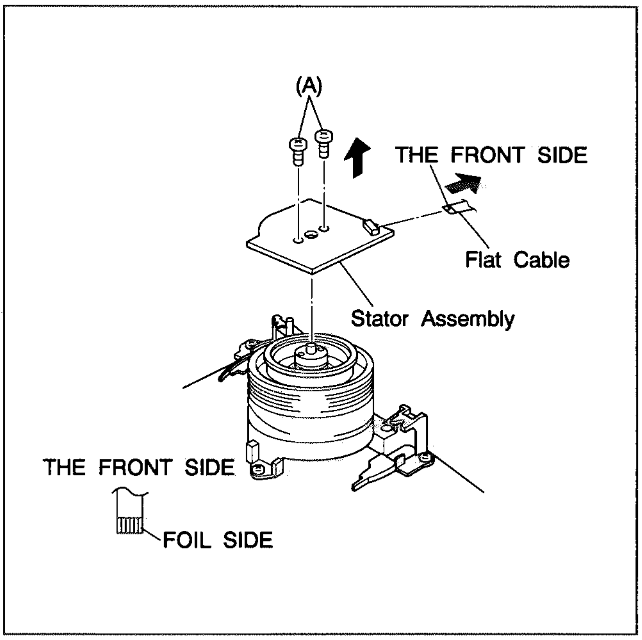

(A)
THE FRONT SIDE
Flat Cable
Stator Assembly
THE FRONT SIDE
FOIL SIDE

Fig. 2-5-22

NOTE : *When refitting the connector, check that the flat wire is inserted correctly.*

2.5.16 Rotor Assembly

(1) Remove the stator assembly.
(2) Take out 2 screws (B) and remove the rotor assembly.

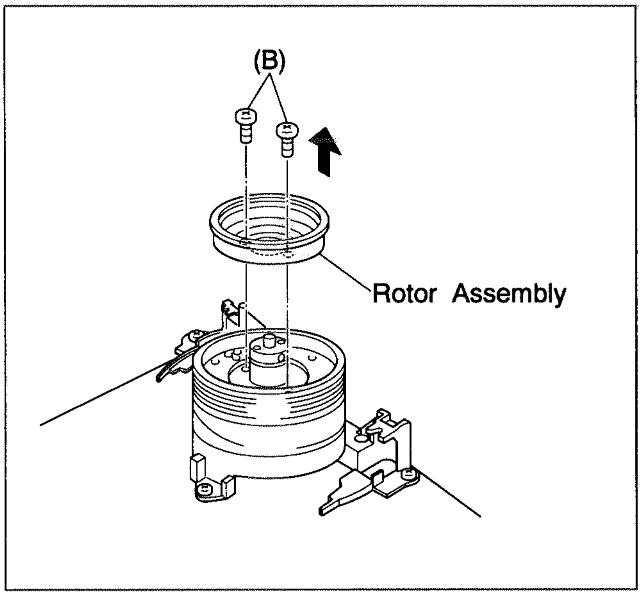

(B)
Rotor Assembly

Fig.2-5-23

(3) Align the upper dum assembly and rotor assembly phase as indicated in Fig.2-5-22.
(4) Overlap holes (a) of the upper drum assembly with holes (b) of the rotor assembly (align holes in 3 locations) and secure with 2 screws (B) as indicated in Fig.2-5-21.

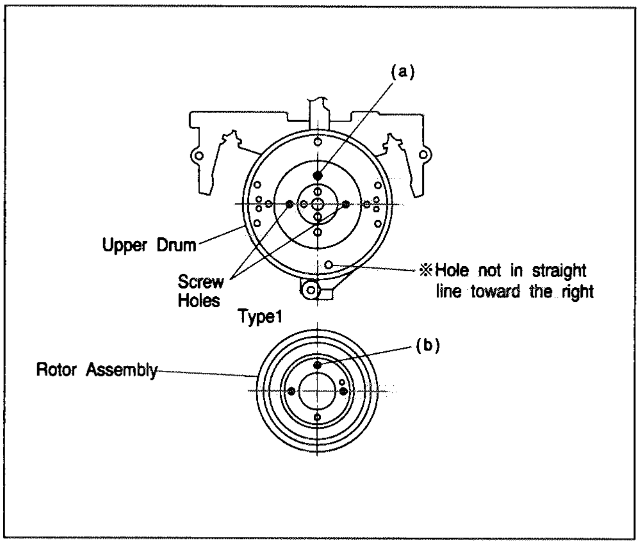

(a)
Upper Drum
Screw Holes
Type1
※Hole not in straight line toward the right
(b)
Rotor Assembly

Fig. 2-5-24

2.5.17 Upper Drum Assembly

1. Removal

(1) Remove the stator assembly and rotor assembly.
(2) Use a 1.5 mm hexagonal wrench to loosen the collar assembly screw and remove the collar assembly.
(3) Remove the upper drum assembly and use tweezers to remove the Washer.

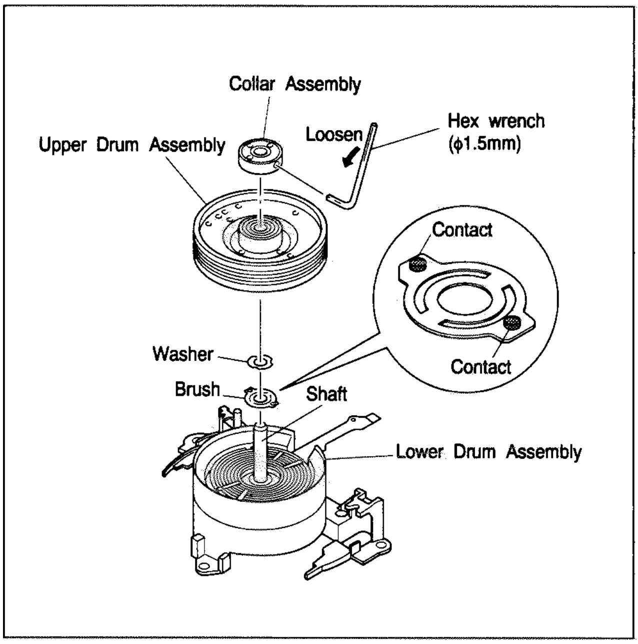

Collar Assembly
Upper Drum Assembly
Loosen
Hex wrench (ϕ1.5mm)
Contact
Contact
Washer
Brush
Shaft
Lower Drum Assembly

Fig. 2-5-25

NOTE : *When replacing the upper drum assembly,it is recommended to replace the brush.*

2. Installation

(1) Use an air brush to clean the lower drum assembly and the coil section of the new upper drum assembly.
(2) Set a new washer on the drum shaft as indicated in Fig.2-5-25.

NOTE : *Be sure to use the new washer when replace the upper drum assembly.*

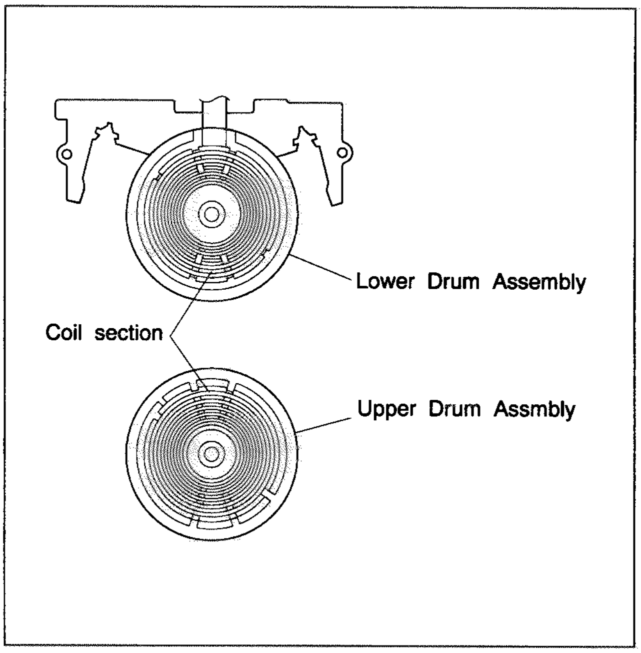

Lower Drum Assembly
Coil section
Upper Drum Assmbly

Fig.2-5-26

(3) Note the top and bottom of the collar assembly and determine the position as indicated in Fig.2-5-27.

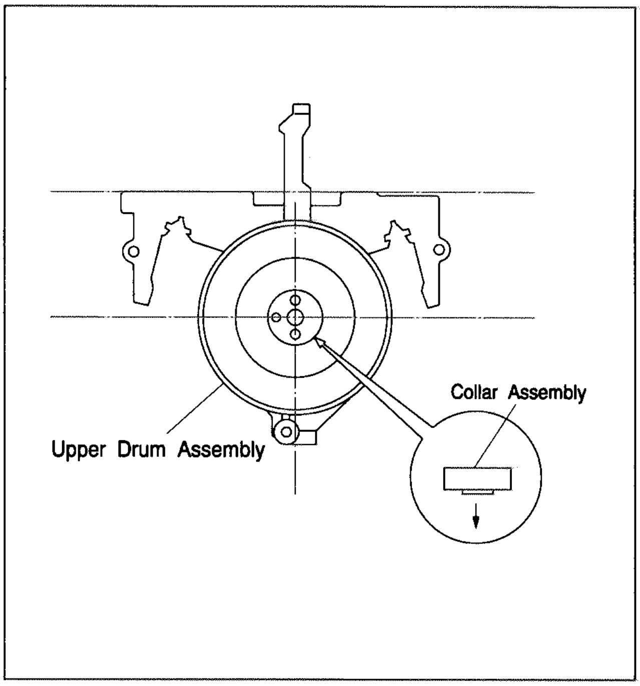

Collar Assembly
Upper Drum Assembly

Fig.2-5-27

(4) While pressing the collar assembly evenly from above with your fingertips,secure the hexagonal screw.

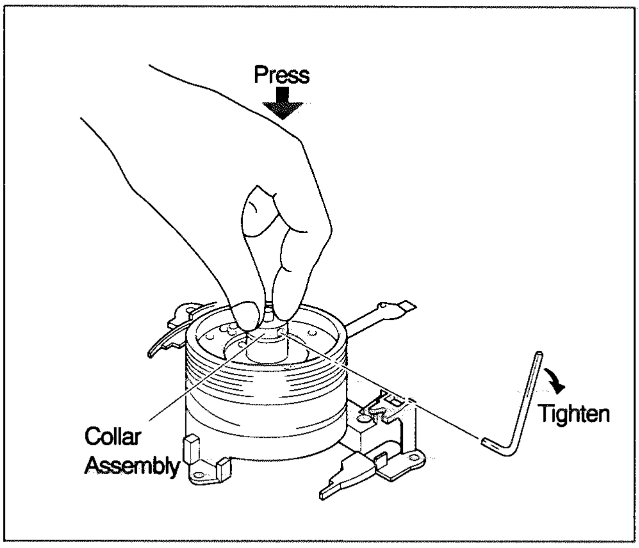

Press
Tighten
Collar Assembly

Fig.2-5-28

(5) After installing,gently turn the upper drum by hand and confirm normal rotation.
(6) Install the rotor assembly and stator assembly.
(7) Clean the upper and lower drum assemblies and perform the following adjustments;
  - PB switching point adjustment
  - Slow tracking preset adjustment
  - Interchangeability adjustment (be sure to check LP mode)

2.6 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

2.6.1 Precaution

The rotary encoder and syscon circuit are closely interrelated.Therefore,the rotary encoder and control cam conection determines the operations of mechanical parts such as plates,gears,brakes,etc.Correct positioning of these parts is essential for smooth tape loading and mechanical operations.

2.6.2 Loadidg Arm Assemby (supply,take-up)

(1) Install the supply loading arm assembly and the take-up loading arm assembly so that their positioning markings on the respective gear face each other and the holes of their arms correspond to the holes on the main deck assembly respectively.
(2) After setting the guide rails,engage the pole base assemblies with the tip of the loading arms respectively. Then,enter the mechanism into the unloading mode to return the pole base assemblies to the front position.
(3) Reassemble the peripheral parts of the guide rail to its original position.

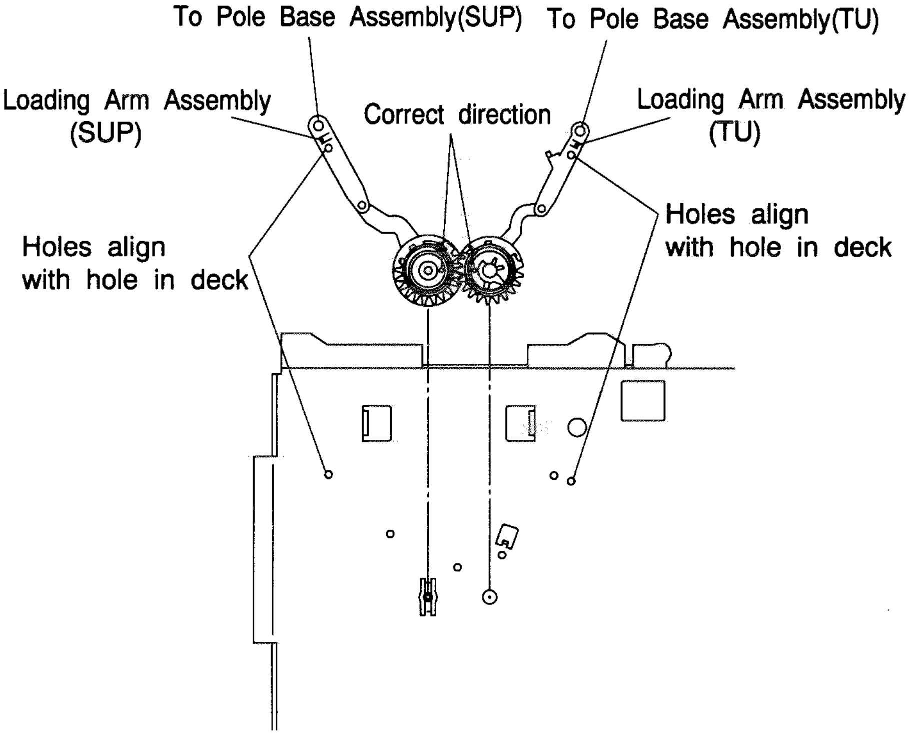

To Pole Base Assembly(SUP)
To Pole Base Assembly(TU)
Loading Arm Assembly (SUP)
Correct direction
Loading Arm Assembly (TU)
Holes align with hole in deck
Holes align with hole in deck

Fig. 2-6-1

2.6.3 Rotary Encoder,Change Lever,Control Cam

(1) When reinstalling the rotary encoder,adjust its position so as to fit the triangle marks each other and push it deep untill it is locked by the pawls.

(2) When reinstalling the change lever,set it so as to make its positioning hole correspond to the hole of the main deck assembly.

(3) When re-engaging the control cam,lower the capstan brake assembly while setting it so as to make its positioning hole correspond to the hole of the main deck assembly.

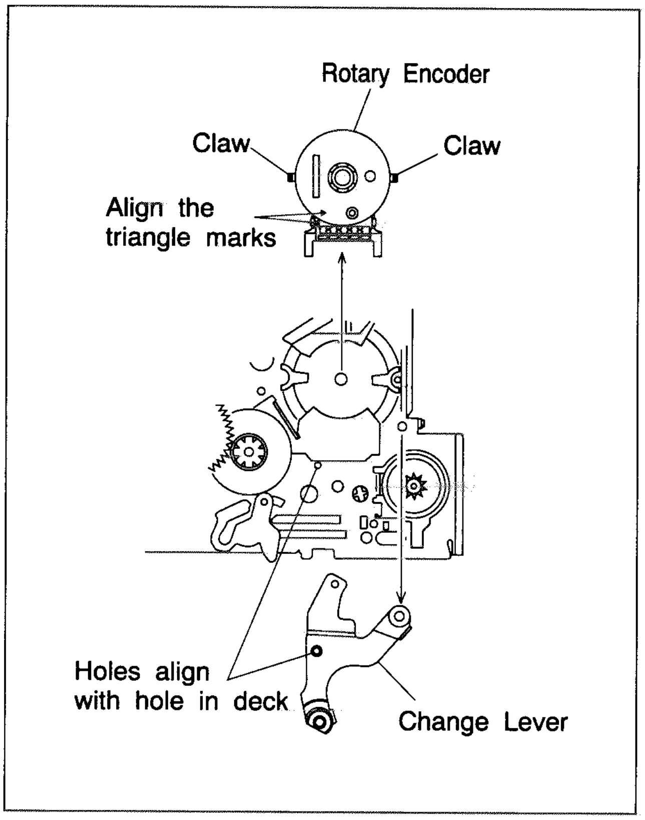

Rotary Encoder
Claw
Claw
Align the triangle marks
Holes align with hole in deck
Change Lever

Fig. 2-6-2

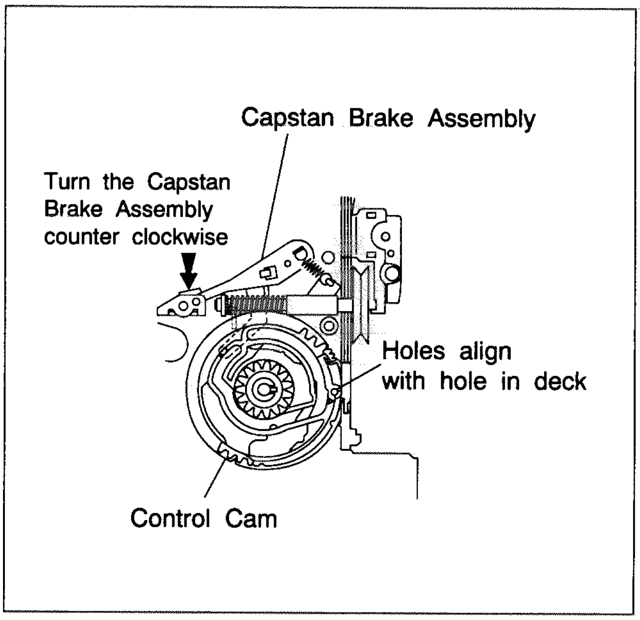

Capstan Brake Assembly
Turn the Capstan Brake Assembly counter clockwise
Holes align with hole in deck
Control Cam

Fig. 2-6-3

2.6.4 Slide Plate

(1) Lower both the main brake assemblies (supply and take-up) untill they touch the edge of the main deck assembly while reinstalling the slide plate so as to make the respective positioning holes of the main brake assemblies correspond to the holes on the main deck assembly.

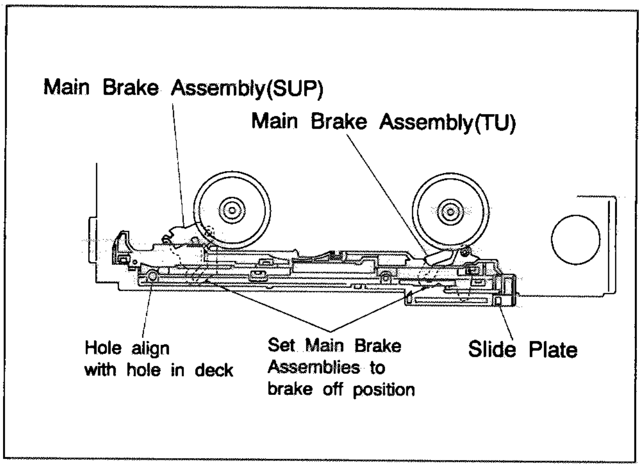

Main Brake Assembly(SUP)
Main Brake Assembly(TU)
Hole align with hole in deck
Set Main Brake Assemblies to brake off position
Slide Plate

Fig.2-6-4

2.6.5 Control Plate

(1) Reinstall the control plate so as to set the two positioning holes of it on the holes on the main deck assembly respectively and to set the positioning hole of the take-up lever on the hole of the main deck at the same time. When adjusting the hole position of the take-up lever,use a pair of tweezers to hold and move it since it is pulled by a tension spring.

(2) After reinstalling the control plate,fix it with the slit washer,control bracket-1 and -2.

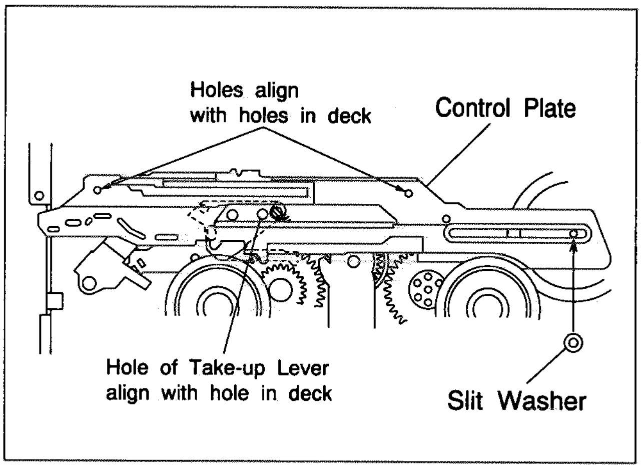

Holes align with holes in deck
Control Plate
Hole of Take-up Lever align with hole in deck
Slit Washer

Fig. 2-6-5

2.7 TAPE INTERCHANGEABILITY ADJUSTMENT

NOTE : • *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components(A/C head,upper/lower drum assembly,pole base assembly,etc).*

- *Before using costly alignment tape,use a spare tape and confirm correct operation of the tape transport.*

2.7.1 Tape pattern

(1) Connect the oscilloscope to TP106(PB FM) on the PRE/REC board.Use TP111(D.FF) on the PRE/REC board as a trigger.

(2) Playback the SP stairstep portion of the alignment tape [MHPE].Confirm that the FM waveform appears as indicated in Fig.2-7-1.

(3) Set the manual tracking position by pressing the **///** button on the remote controller or TV PROG '-' and '+' buttons simultaneously.

(4) Operate the tracking adjustment (press the TV PROG buttons during playback) and set for maximum playback FM waveform.

(5) By operating the TV PROG button,vary the FM waveform from maximum to minimum and vice versa to confirm that the waveform varies nearly in a flat shape as shown in Fig.2-7-1.

(6) When the FM waveform does not remain flat during this process,first slightly loosen the set screw located at the bottom of the guide rollers.Using the guide roller adjustment tool (Roller driver) ,adjust the supply and take-up guide rollers (refer to Fig.2-7-2) to obtain the correct waveform as indicated in Fig.2-7-3.

(7) By pressing the TV PROG buttons several times,vary the FM waveform output from maximum to minimum (and vice versa) gradually,and confirm that the variation proceeds in flat shape, as shown in Fig.2-7-3.

(8) Next playback the LP stairstep portion of the alignment tape [MHPE-L] and adjust the tracking control from maximum to minimum the FM waveform,confirm that FM waveform variation is always flat.

(9) Record the signal and play it back in both of the SP and LP mode,confirm that the FM waveform is flat in both mode.

(10) After adjustments,tighten the set screw of the guide rollers.

(11) Confirm that the tape wrinking does not occur at the roller upper or lower limits as indicated in Fig.2-7-4.

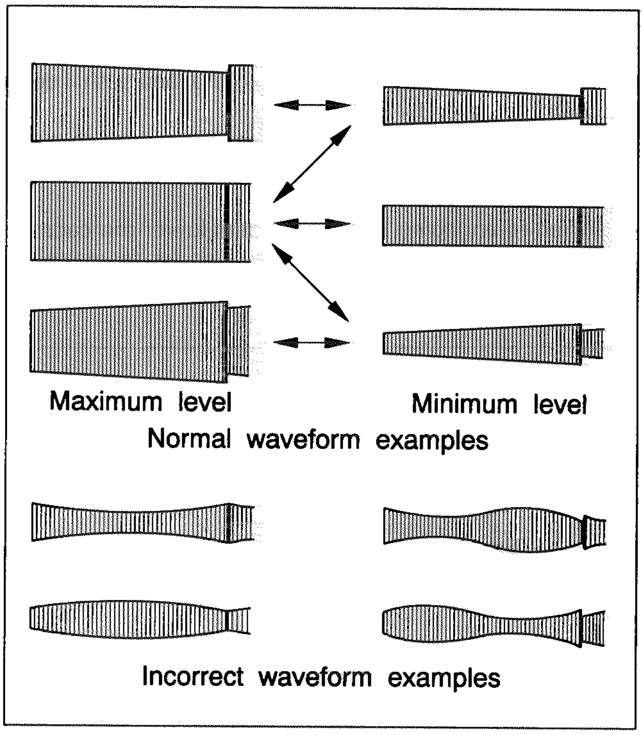


Fig. 2-7-1

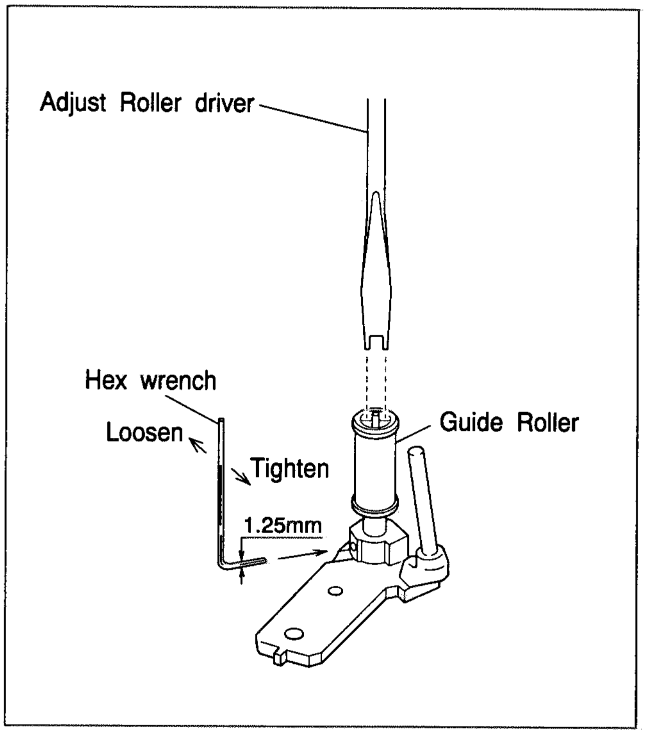


Fig. 2-7-2

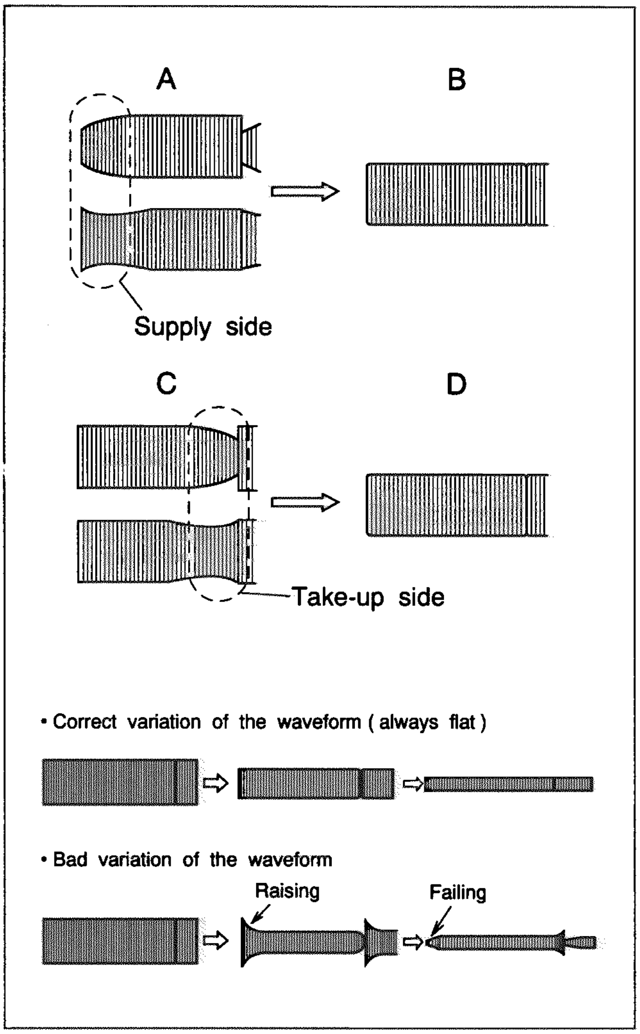

A
B
Supply side
C
D
Take-up side
• Correct variation of the waveform (always flat)
• Bad variation of the waveform
Raising
Failing

Fig. 2-7-3

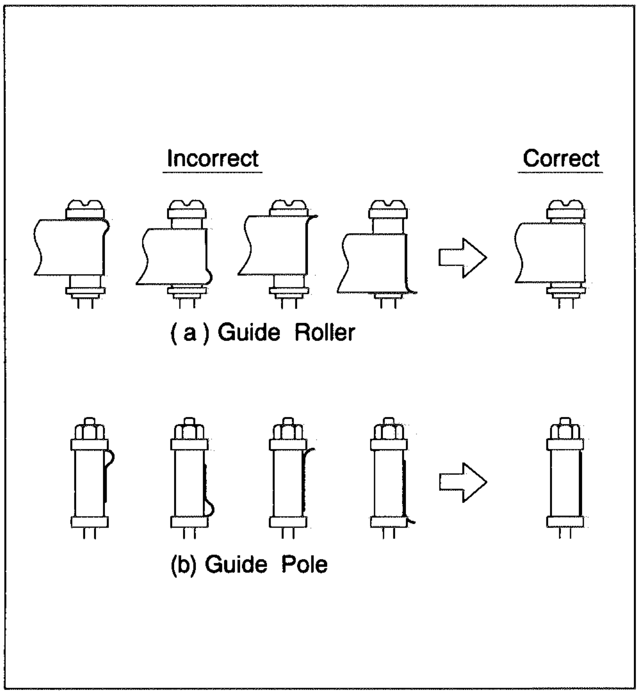

Incorrect
Correct
(a) Guide Roller
(b) Guide Pole

Fig. 2-7-4

2.7.2 A/C head height & azimuth

NOTE :
- *Temporarily set A/C head height as indicated in Fig. 2-5-4.*
- *Use spare tape to check the transport and confirm the tape is not scratched or damaged.*

1. Tilt

(1) Use spare tape and set for playback.
(2) Turn screw (3) clockwise to where the tape curls just slightly at the TU guide pole bottom flange as shown in Fig.2-7-5.
(3) Then slowly turn screw (3) counterclockwise to where the curling ceases.

2. Height

(1) Connect CH-1 of a dual trace oscilloscope to Audio Out.
(2) Connect CH-2 to TP1101(CTL PULSE) of the Main board assembly and use the ALT mode.
(3) Playback the SP stairstep portion of the alignment tape [MHPE].
(4) Adjust screws (1),(2) and (3) for maximum audio output and control pulse level.

3. Azimuth

(1) Connect the oscilloscope to Audio Out.
(2) Playback the SP stairstep portion of the alignment tape [MHPE].
(3) Adjust screw (2) so that the audio output is both maximum and with minimum fluctuation.

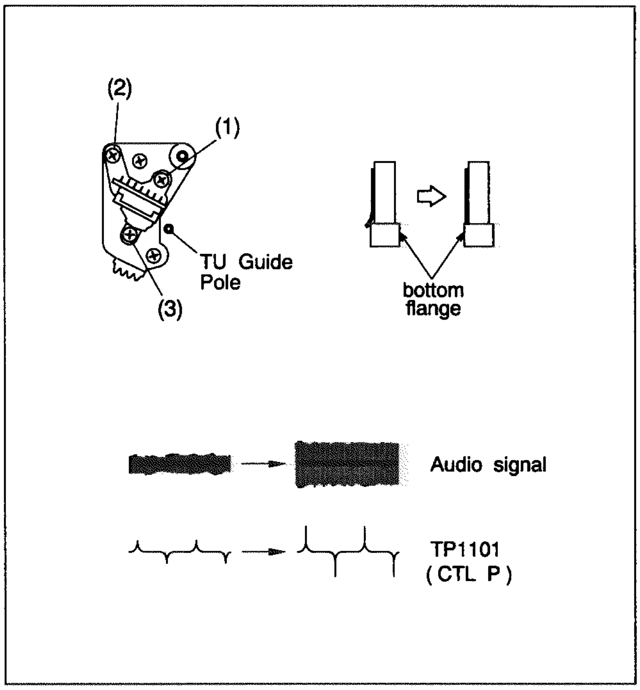

(2)
(1)
TU Guide Pole
(3)
bottom flange
Audio signal
TP1101
(CTL P)

Fig. 2-7-5

2.7.3 A/C head phase(X-value)

(1) Connect the oscilloscope to TP106(PB FM) on the MAIN board.Use TP111(D.FF) on the MAIN board as a trigger.

(2) Playback the SP stairstep portion of the alignment tape [MHPE].

(3) Set the neutral manual tracking position by pressing the *///* button on the remote controller or TV PROG "-" and "+" buttons simultaneously.

(4) If adjustment is required,slightly loosen screws (4) and (5). Set A/C head positioning tool on the A/C head adjusting boss as indicated in Fig.2-7-6.

(5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig.2-7-7.

(6) Tighten screw (5). Remove the tool and tighten screw (4).

(7) Eject the SP alighnment tape [MHPE] and then re-insert the LP alignment tape [MHPE-L].

(8) Playback the LP stairstep portion of the alignment tape [MHPE-L].

(9) Set the neutral manual tracking position by pressing the *///* button on the remote controller or TV PROG "-" and "+" buttons simultaneously.

(10) Confirm maximum playback FM waveform output level as shown in Fig.2-7-7.

(11) If not maximum,slightly loosen the screws (4) and (5). Use the tool and adjust the head position for the nearest maximum point. Then tighten screws (4) and (5).

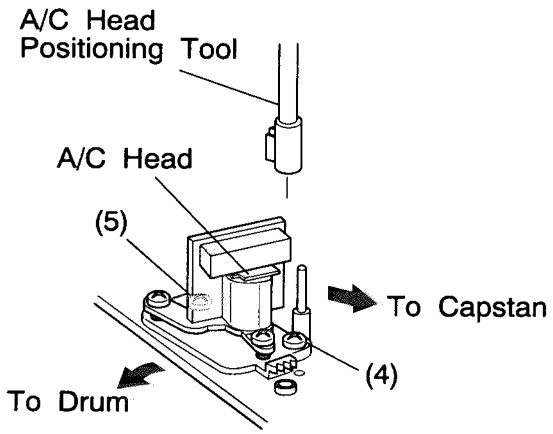

A/C Head
Positioning Tool
A/C Head
(5)
To Capstan
(4)
To Drum

Fig. 2-7-6

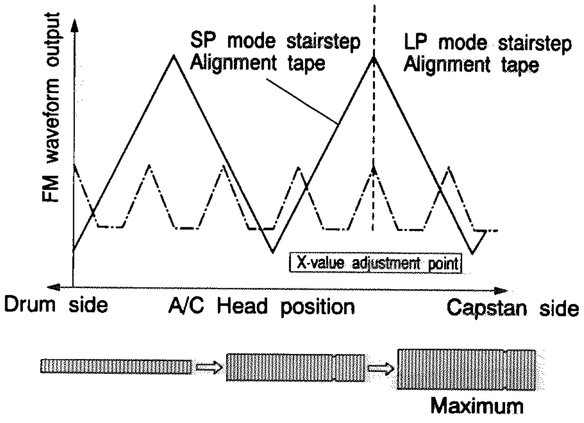

FM waveform output
SP mode stairstep
Alignment tape
LP mode stairstep
Alignment tape
X-value adjustment point
Drum side
A/C Head position
Capstan side
Maximum

Fig. 2-7-7

2.7.4 LP mode auto tracking

NOTE : *Set VCR to the mode A by remote controller.*

(1) Connect the oscilloscope to TP106(PB FM) on the MAIN Board. Use TP111(D.FF) on the MAIN board as a trigger.

(2) Playback the LP stairstep portion of the alignment tape [MHPE-L].

(3) Confirm the FM waveform of the oscilloscope screen until auto tracking action is over.

(4) Twice press button "D" of the presetting unit [PTU94008].

(5) If the alignment tape ejects automatically,repeat the A/C head phase adjustment (X-value).

2.7.5 Tension pole position

(1) Set for playback mode using MECHANISM SERVICE MODE(See SECTION 1 DISASSEMBLY).
(2) Slightly loosen the screw (A) .
(3) Turn the adjust pin so that the tension arm assembly does not touch ϕ2.5 pole on the outside.
(4) Tighten the screw (A).
(5) After adjustment,use the back tension cassette gauge and set for the playback mode.
(6) Confirm reading of 29 to 46 g•cm.

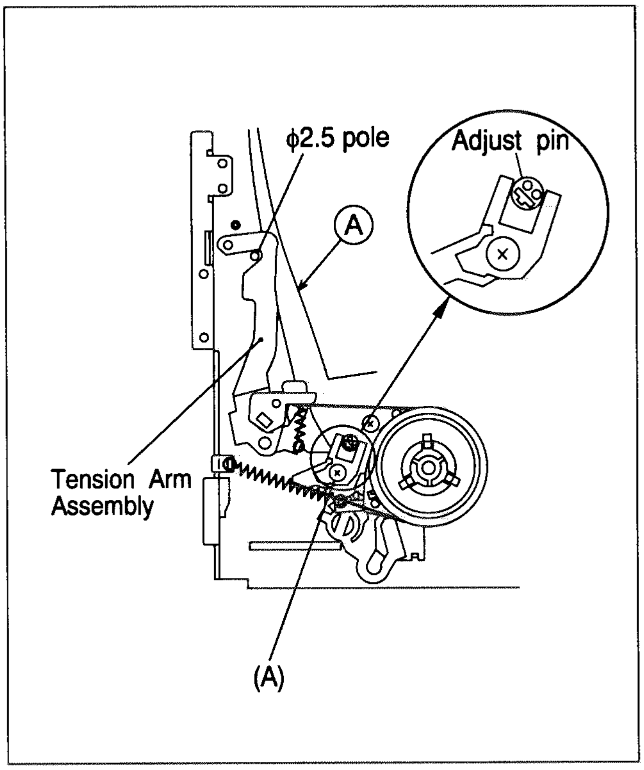


Fig. 2-7-8

2.7.6 Take-up torque

(1) Use the back tension cassette gauge and set for the playback mode.
(2) Confirm reading of 60 to 100 g•cm.

SECTION 3
ELECTRICAL ADJUSTMENT

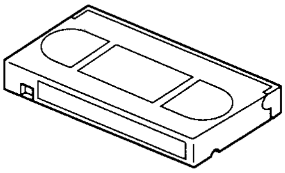
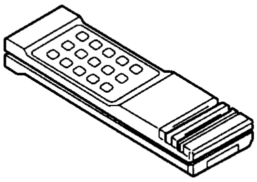
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is available.

3.1.1 Required test equipment

① Colour television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Digital voltmeter
⑤ Signal generator: RF/IF sweep/maker
⑥ Signal generator: PAL colour bar, stairstep
⑦ Recording tape
⑧ Numeric remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP,stairstep) MHPE	Presetting unit PTU940008
	

3.1.3 Colour bar signal,colour bar pattern

- Colour bar signal

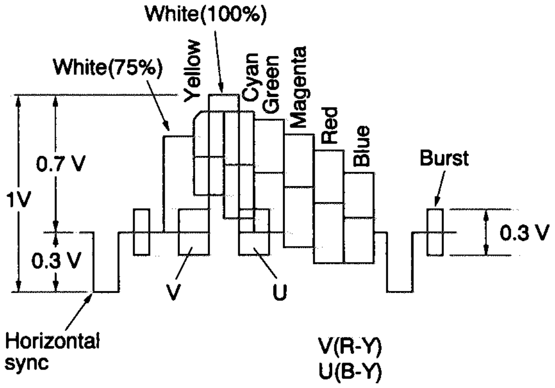
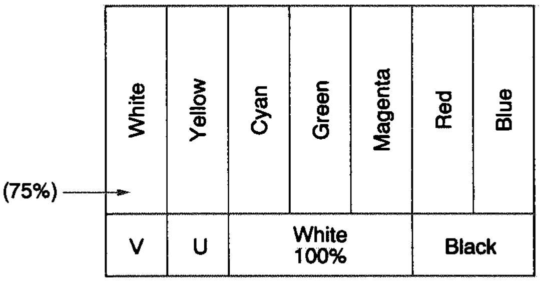


Fig.3-1-1 Colour bar signal waveform

- Colour bar pattern



White	Yellow	Cyan	Green	Magenta	Red	Blue
V	U	White 100%			Black	

Fig.3-1-2 Colour bar pattern

3.2 SERVO CIRCUIT

Notes:
- *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*
- *Set VCR to the mode A by remote controller.*
- *Use only buttons "O", depressing other buttons during adjustment may cause adjustment errors.*

3.2.1 PB switching point

Signal	• Alignment tape [MHPE],Stairstep
Mode	• PB
Equipment	• Oscilloscope
Measurement point	• VIDEO OUT
Trigger slope (-)	• TP111(DRUM FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• 6.5 ± 0.5H

(1) Connect an oscilloscope to VIDEO OUT and external trigger from TP111 (negative slope).
(2) Playback the stairstep signal of the alignment tape.
(3) Press the "O" button of the presetting unit.
(4) The adjustment is performed automatically.
Once the adjustment is performed, the VCR will go into the STOP mode.

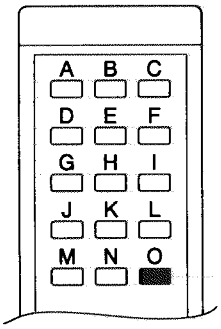


Fig.3-2-1 Presetting unit

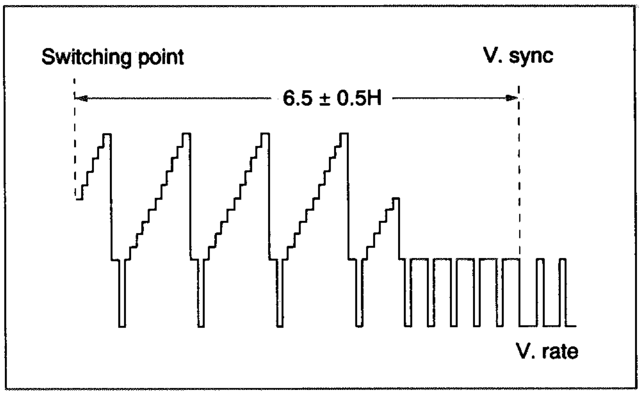


Fig.3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Colour bar (PAL,NTSC)
Mode	•SP/LP : PAL REC → PB(SLOW) •SP/EP : NTSC
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit [PTU94008]
Specification	• Minimum noise

Note : *Set VCR to the mode A by remote controller. Use only buttons "B" and "C", depressing other buttons during adjustment may cause adjustment errors.*

(1) Record a PAL colour bar signal in the SP mode.
(2) Playback recorded signal on the FWD slow mode.
(3) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing "B " or "C " buttons of the presetting unit.
(4) Depress the STOP button.
(5) Confirm that the bar noise is not visible on the TV monitor in the slow mode.
(6) Repeat steps (1) to (6) in the LP mode.
(7) Repeat steps (1) to (6) in the NTSC mode.

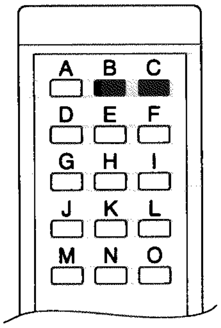


Fig.3-2-3 Presetting unit

3.3 VIDEO CIRCUIT

Notes: • *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*

• *Set VCR to the mode A by remote controller.*

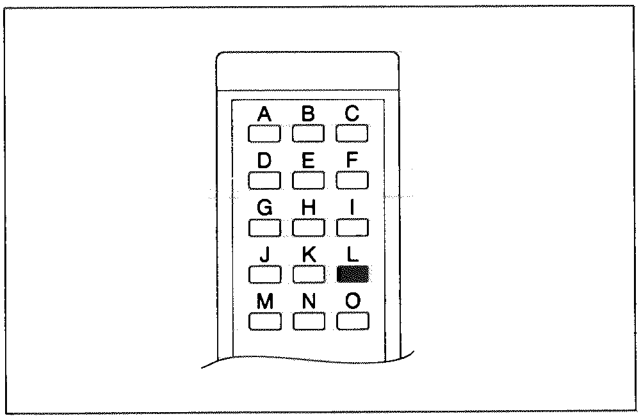


Fig.3-3-1 Presetting unit

3.3.1 Auto picture

Signal	• Monoscope
Mode	• REC then PB • SP/LP : PAL • SP/EP : NTSC
Adjustment tool	• Presetting unit[PTU94008]
Specification	• STOP mode

(1) Record a monoscope signal in the SP mode.
(2) Playback the recorded signal.
(3) Press the "L" button of the presetting unit during playback.
(4) Confirm that VCR will go into the STOP mode.
(5) Repeat steps (2) to (4) in the LP mode.
(6) Repeat steps (1) to (5) in the NTSC mode.

3.4 SYSCON CIRCUIT

Notes: • *Unless otherwise specified,all measurement point and adjustment parts are located on the MAIN BOARD.*

• *When perform this adjustment,remove the MECHANISM assembly.*

3.4.1 Timer clock

Signal	• No signal
Mode	• EE
Equipment	• Frequency counter
Measurement point	• TP702 (SYS.CLK)
Adjustment part	• C701 (TIMER CLOCK)
Specification	• 1024.008 ± 0.001 Hz [976.5549 ± 0.0010 µsec]

(1) Connect the frequency counter to TP702 and GND.
(2) Connect the short wire between TP701 and Vcc(5V).
(3) Short the leads of capacitor C704 once in order to reset IC701.
(4) Disconnect the short wire then connect it again quickly.
(5) Adjust C701 for 1024.008 ± 0.001 Hz.
(976.5549 ± 0.0010 µsec)

3.5 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT.*

3.5.1 RF AGC

Signal	• TV broadcasting
Mode	• Tuner
Equipment	• TV monitor
Measurement point	• IF UNIT
Adjustment part	• IF VR
Specification	• Minimum noise

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

(1) Adjust IF VR to minimize noise or streaks on the TV screen.
(2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

1. Units of components on the schematic diagram

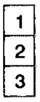
Unless otherwise specified.

1) All resistance values are in ohm. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or IN4148M (refer to parts list).

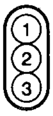
2. Indications of control voltage

AUX : Active only at high.
$\overline{\text{AUX}}$ or AUX(L) : Active at low.

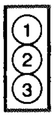
3. Interpreting Connector indications



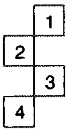
Removable connector



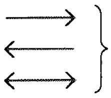
Wire soldered directly on board



Non-removable Board connector

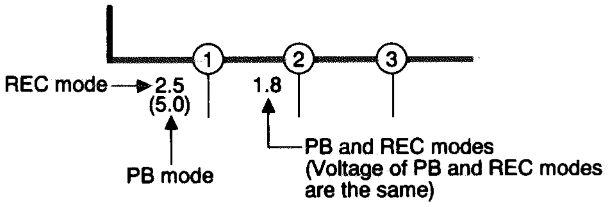


Board to Board


Connected pattern on board

4. Voltage measurement

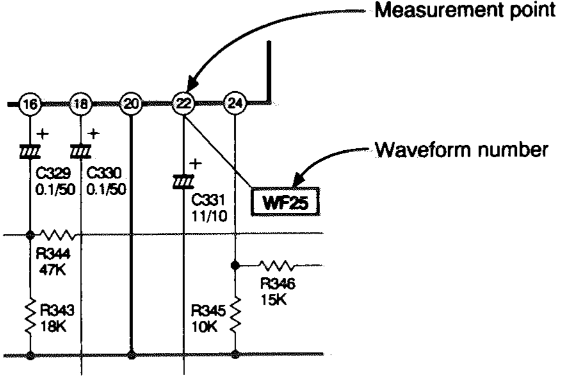
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio circuis
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.


1
2
3
REC mode
2.5
(5.0)
1.8
PB mode
PB and REC modes
(Voltage of PB and REC modes are the same)

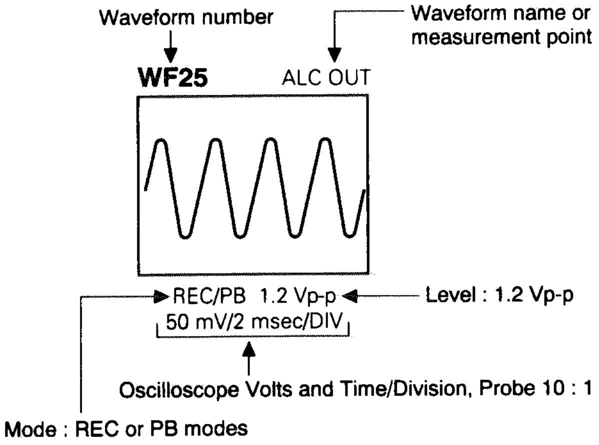
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test chatrs in the E-E mode.
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.

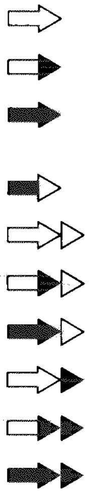

Measurement point
16
18
20
22
24
Waveform number
C329
0.1/50
C330
0.1/50
C331
11/10
WF25
R344
47K
R343
18K
R345
10K
R346
15K

5) Waveform indications


Waveform number
Waveform name or measurement point
WF25
ALC OUT
REC/PB 1.2 Vp-p
Level : 1.2 Vp-p
50 mV/2 msec/DIV
Oscilloscope Volts and Time/Division, Probe 10 : 1
Mode : REC or PB modes

6. Signal path Symbols

The arrows indicate the signal path as follows.



Playback signal path

Playback and recording signal path

Recording signal path
(including E-E signal path)

Y signal path

Colour (Chroma) signal path

R or R-Y signal path

B or B-Y signal path

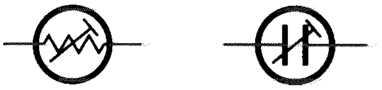
Capstan servo path

Drum servo path

Reel servo path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.
Or the symbol number is struck off by two lines as below.

~~R216~~
10K

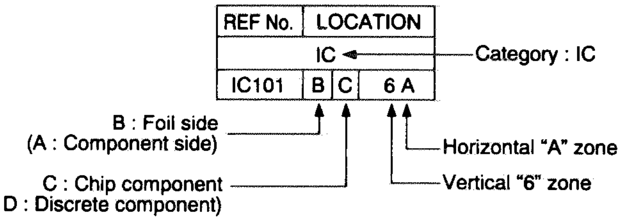
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

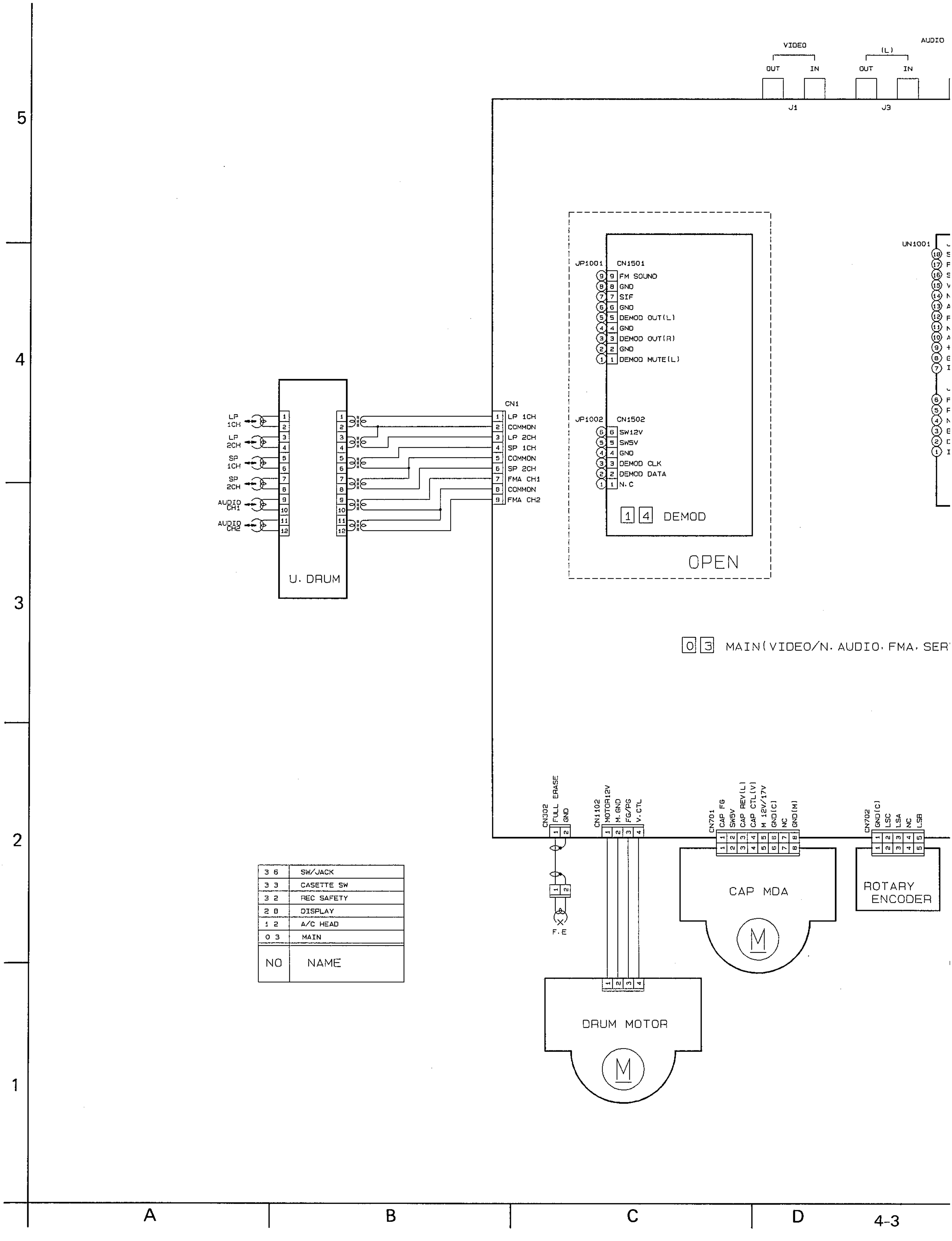
Parts location are indicated by guide scale on the circuit board.

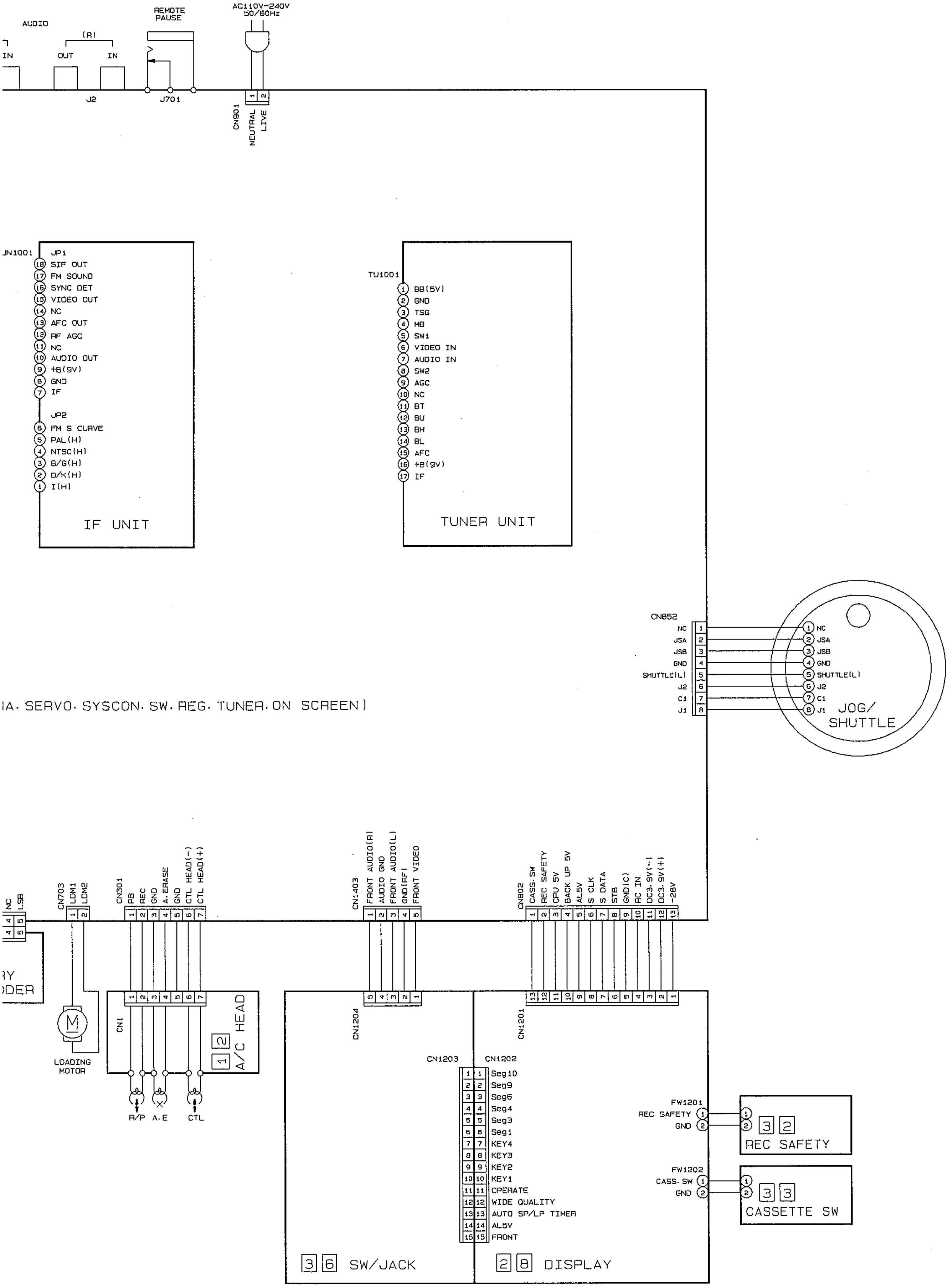

REF No.
LOCATION
IC
Category : IC
IC101
B
C
6 A
B : Foil side
(A : Component side)
Horizontal "A" zone
C : Chip component
D : Discrete component)
Vertical "6" zone

Notes:

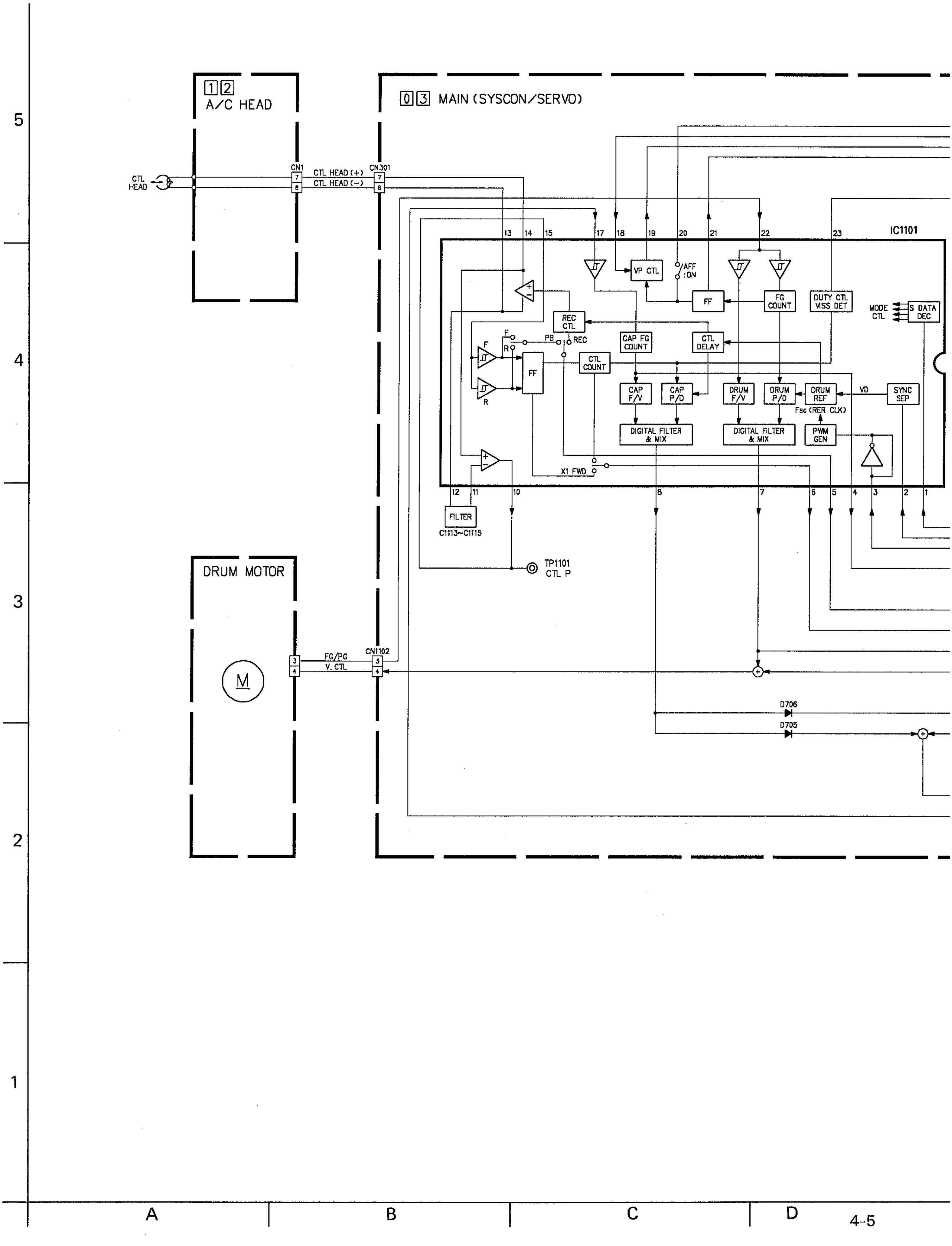
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

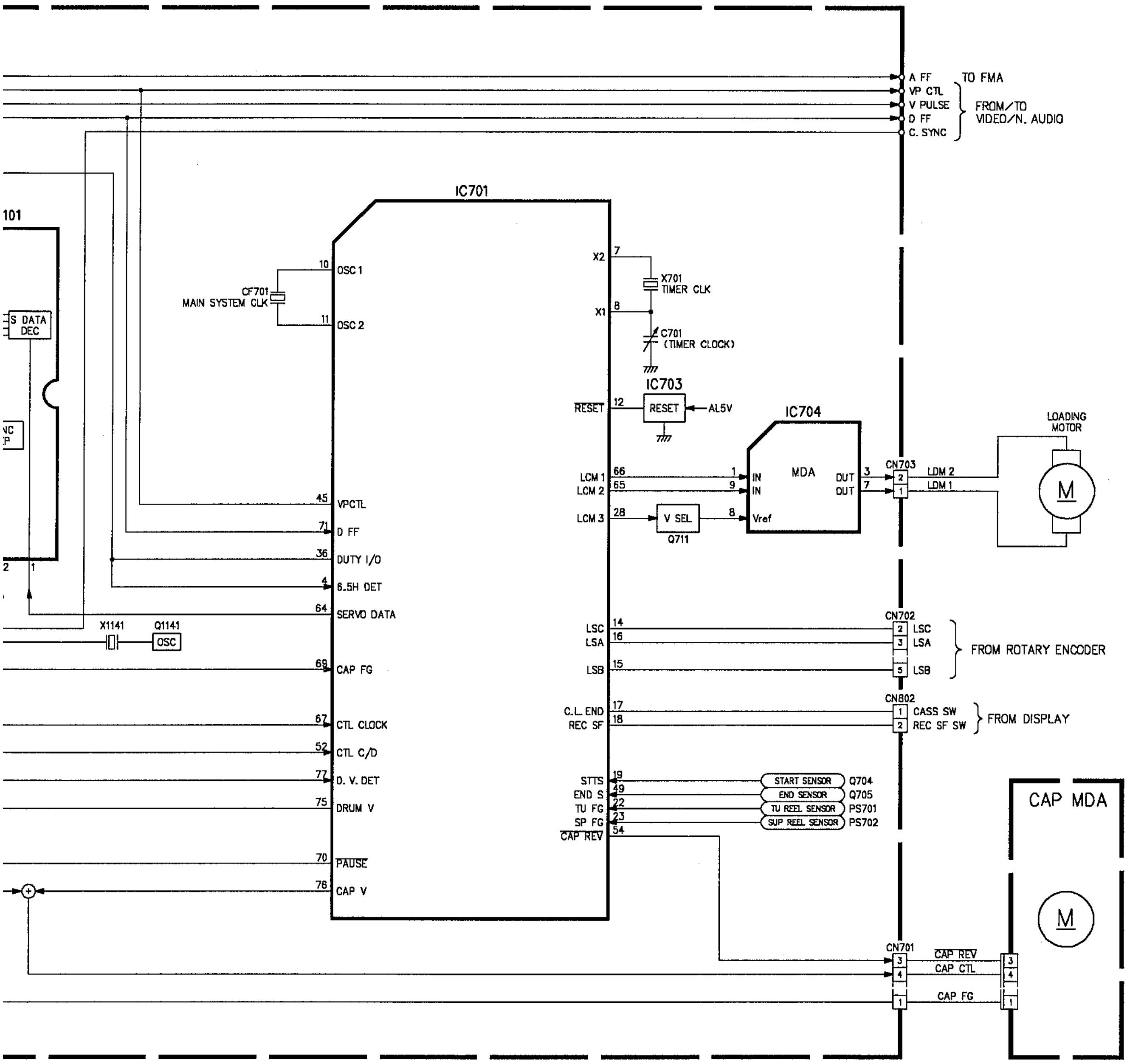
4.1 BOARD INTERCONNECTIONS


VIDEO
OUT
IN
J1
(L)
OUT
IN
J3
AUDIO
JP1001
CN1501
9 FM SOUND
8 GND
7 SIF
6 GND
5 DEMOD OUT(L)
4 GND
3 DEMOD OUT(R)
2 GND
1 DEMOD MUTE(L)
JP1002
CN1502
6 SW12V
5 SW5V
4 GND
3 DEMOD CLK
2 DEMOD DATA
1 N.C
1 4 DEMOD
OPEN
UN1001
LP 1CH
LP 2CH
SP 1CH
SP 2CH
AUDIO CH1
AUDIO CH2
U. DRUM
CN1
1 LP 1CH
2 COMMON
3 LP 2CH
4 SP 1CH
5 COMMON
6 SP 2CH
7 FMA CH1
8 COMMON
9 FMA CH2
0 3 MAIN(VIDEO/N. AUDIO. FMA. SER
CN302
FULL ERASE
GND
F.E
CN1102
MOTOR12V
M.GND
FG/PG
V.CTL
DRUM MOTOR
M
CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(V)
M 12V/17V
GND(C)
NC
GND(M)
CAP MDA
M
CN702
GND(C)
LSC
LSA
NC
LSB
ROTARY ENCODER
3 6 SW/JACK
3 3 CASETTE SW
3 2 REC SAFETY
2 8 DISPLAY
1 2 A/C HEAD
0 3 MAIN
NO NAME
5
4
3
2
1
A
B
C
D


AUDIO
(R)
IN
OUT
IN
J2
REMOTE PAUSE
J701
AC110V~240V 50/60Hz
CN901
1
2
NEUTRAL
LIVE
JN1001
JP1
⑱ SIF OUT
⑰ FM SOUND
⑯ SYNC DET
⑮ VIDEO OUT
⑭ NC
⑬ AFC OUT
⑫ RF AGC
⑪ NC
⑩ AUDIO OUT
⑨ +B(9V)
⑧ GND
⑦ IF
JP2
⑥ FM S CURVE
⑤ PAL(H)
④ NTSC(H)
③ B/G(H)
② D/K(H)
① I(H)
IF UNIT
TU1001
① BB(5V)
② GND
③ TSG
④ MB
⑤ SW1
⑥ VIDEO IN
⑦ AUDIO IN
⑧ SW2
⑨ AGC
⑩ NC
⑪ BT
⑫ BU
⑬ BH
⑭ BL
⑮ AFC
⑯ +B(9V)
⑰ IF
TUNER UNIT
CN852
NC 1
JSA 2
JSB 3
GND 4
SHUTTLE(L) 5
J2 6
C1 7
J1 8
① NC
② JSA
③ JSB
④ GND
⑤ SHUTTLE(L)
⑥ J2
⑦ C1
⑧ J1
JOG/ SHUTTLE
IA, SERVO, SYSCON, SW, REG, TUNER, ON SCREEN)
NC
LSB
4 5
4 5
RY
DER
CN703
LDM1
LDM2
1 2
LOADING MOTOR
CN301
PB
REC
GND
A.ERASE
GND
CTL HEAD(-)
CTL HEAD(+)
1 2 3 4 5 6 7
CN1
1 2 3 4 5 6 7
1 2 A/C HEAD
R/P
A.E
CTL
CN1403
FRONT AUDIO(R)
AUDIO GND
FRONT AUDIO(L)
GND(RF)
FRONT VIDEO
1 2 3 4 5
CN1204
5 4 3 2 1
CN902
CASS. SW
REC SAFETY
CPU 5V
BACK UP 5V
AL5V
S CLK
S DATA
STB
GND(C)
RC IN
DC3.5V(-)
DC3.5V(+)
-28V
1 2 3 4 5 6 7 8 9 10 11 12 13
CN1201
13 12 11 10 9 8 7 6 5 4 3 2 1
CN1203
CN1202
1 Seg10
2 Seg9
3 Seg6
4 Seg4
5 Seg3
6 Seg1
7 KEY4
8 KEY3
9 KEY2
10 KEY1
11 OPERATE
12 WIDE QUALITY
13 AUTO SP/LP TIMER
14 AL5V
15 FRONT
3 6 SW/JACK
2 8 DISPLAY
FW1201
REC SAFETY ①
GND ②
①
②
3 2 REC SAFETY
FW1202
CASS. SW ①
GND ②
①
②
3 3 CASSETTE SW

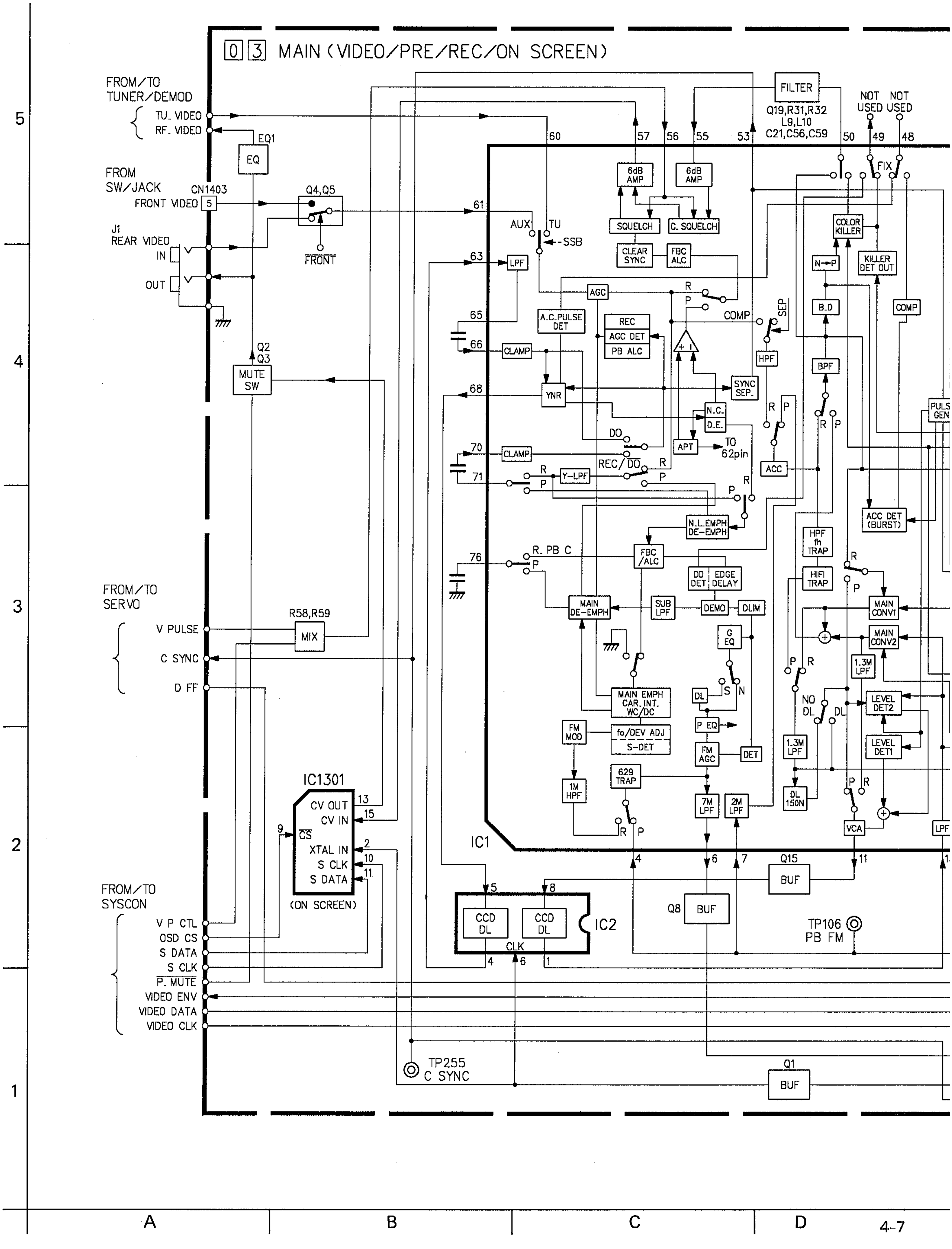
4.2 SYSTEM CONTROL BLOCK DIAGRAM

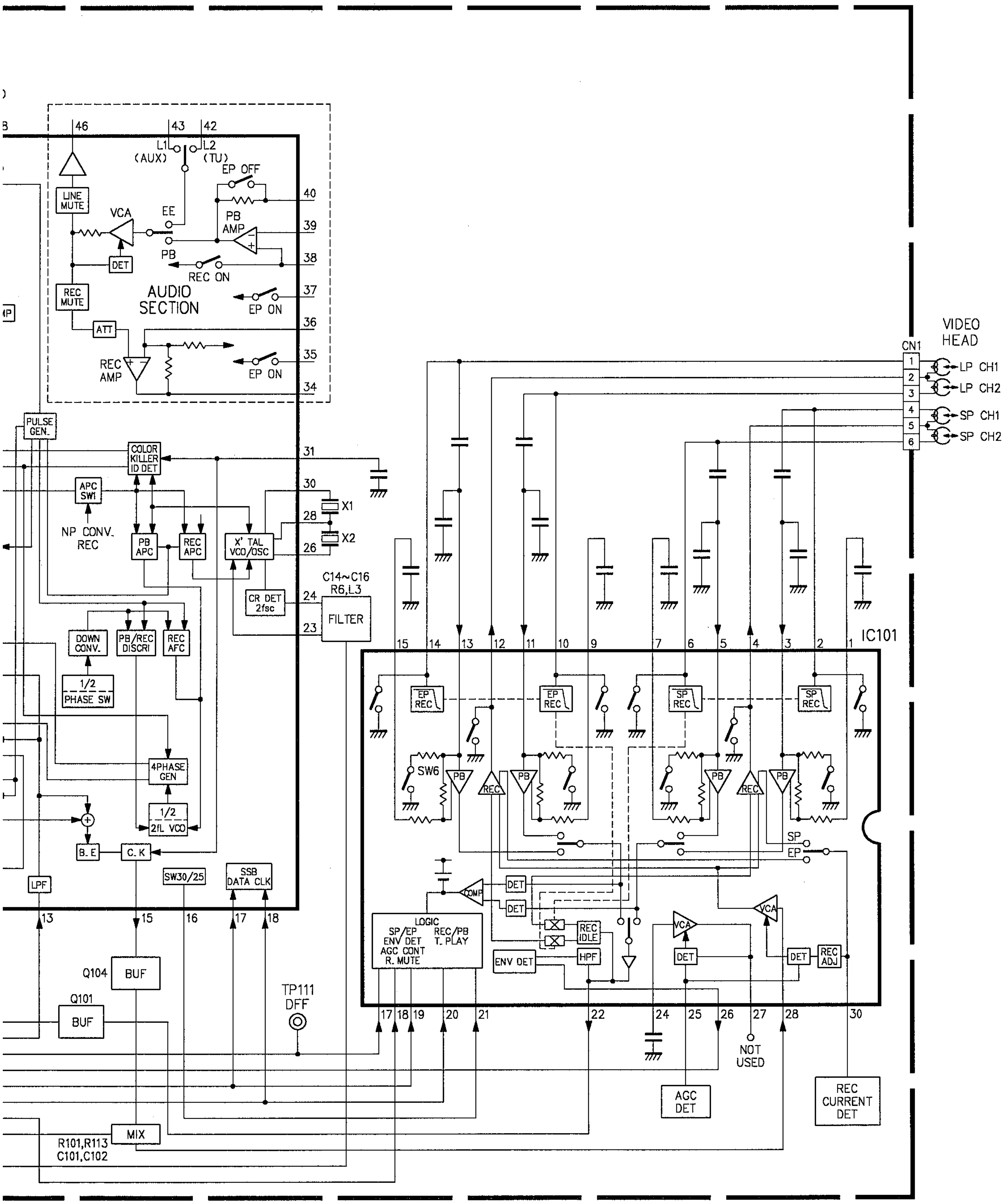

1 2 A/C HEAD
CTL HEAD
CN1
CTL HEAD (+)
CTL HEAD (−)
CN301
0 3 MAIN (SYSCON/SERVO)
IC1101
13
14
15
17
18
19
20
21
22
23
VP CTL
AFF
:ON
FF
FG COUNT
DUTY CTL
VISS DET
MODE CTL
S DATA DEC
REC CTL
PB
REC
F
R
CAP FG COUNT
CTL DELAY
CTL COUNT
CAP F/V
CAP P/D
DRUM F/V
DRUM P/D
DRUM REF
VD
SYNC SEP
Fsc (REF CLK)
PWM GEN
DIGITAL FILTER & MIX
DIGITAL FILTER & MIX
X1 FWD
12
11
10
8
7
6
5
4
3
2
1
FILTER
C1113~C1115
TP1101
CTL P
DRUM MOTOR
M
FG/PG
V. CTL
CN1102
3
4
D706
D705
5
4
3
2
1
A
B
C
D



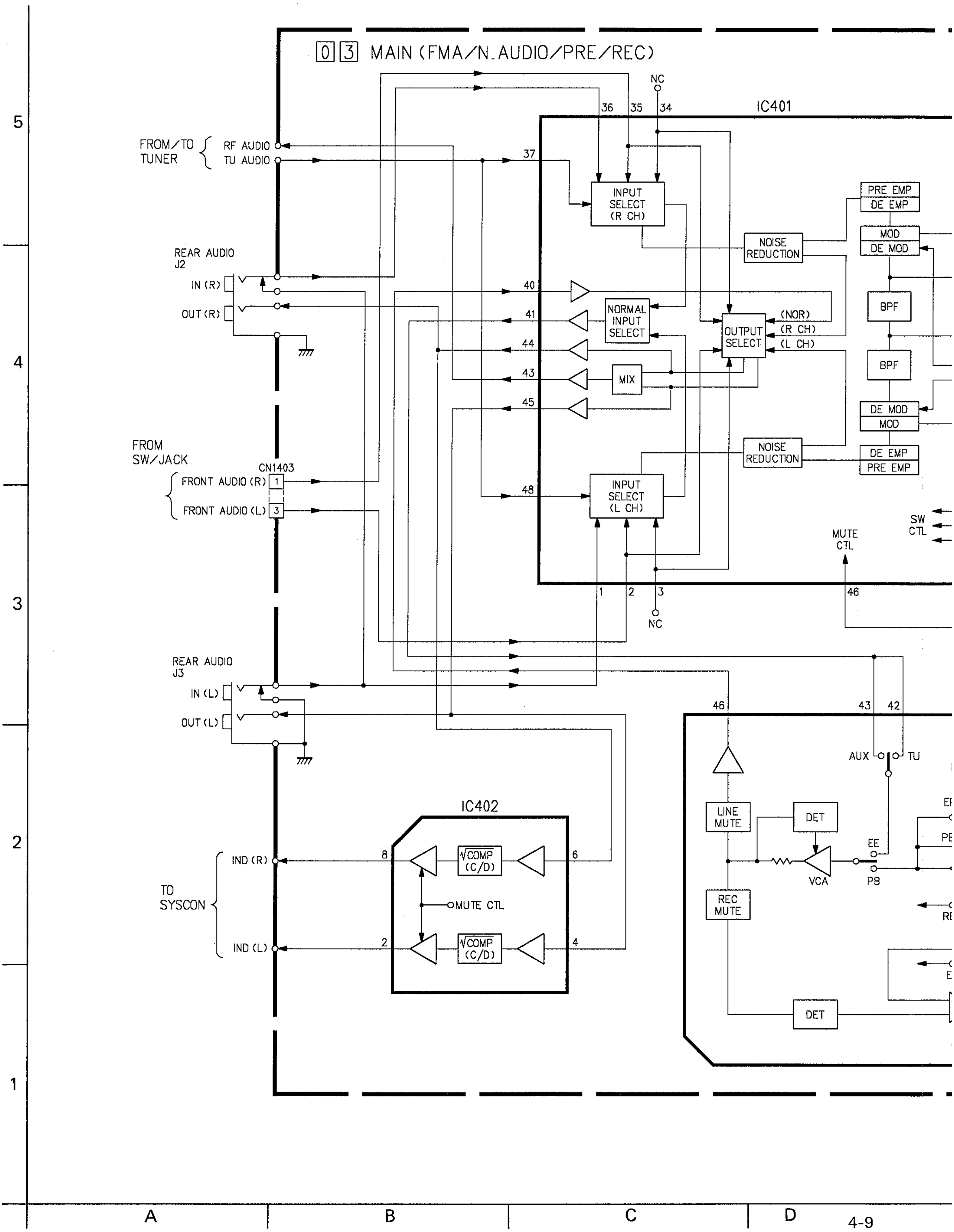
A FF
TO FMA
VP CTL
V PULSE
D FF
C. SYNC
FROM/TO
VIDEO/N. AUDIO
IC701
101
CF701
MAIN SYSTEM CLK
10
OSC 1
11
OSC 2
S DATA
DEC
X2
7
X701
TIMER CLK
X1
8
C701
(TIMER CLOCK)
IC703
RESET
12
RESET
AL5V
IC704
MDA
LCM 1
66
1
IN
LCM 2
65
9
IN
LCM 3
28
V SEL
Q711
8
Vref
OUT
3
OUT
7
CN703
2
1
LDM 2
LDM 1
LOADING
MOTOR
M
45
VPCTL
71
D FF
36
DUTY I/O
4
6.5H DET
64
SERVO DATA
X1141
Q1141
OSC
69
CAP FG
67
CTL CLOCK
52
CTL C/D
77
D. V. DET
75
DRUM V
70
PAUSE
76
CAP V
LSC
14
LSA
16
LSB
15
CN702
2
LSC
3
LSA
5
LSB
FROM ROTARY ENCODER
C.L. END
17
REC SF
18
CN802
1
CASS SW
2
REC SF SW
FROM DISPLAY
STTS
19
END S
49
TU FG
22
SP FG
23
CAP REV
54
START SENSOR
Q704
END SENSOR
Q705
TU REEL SENSOR
PS701
SUP REEL SENSOR
PS702
CAP MDA
M
CN701
3
4
1
CAP REV
CAP CTL
CAP FG
3
4
1
2
1

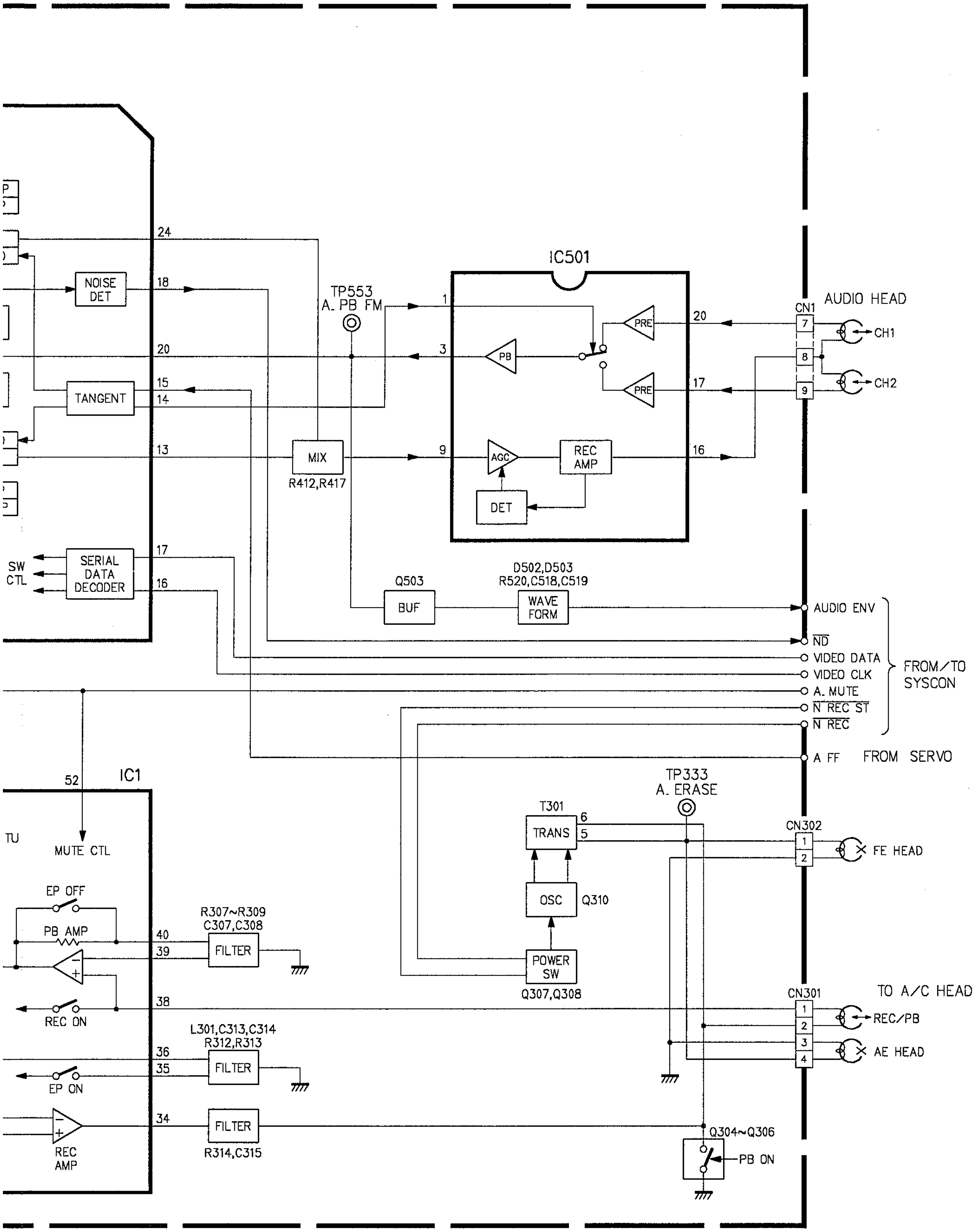
4.3 VIDEO BLOCK DIAGRAM


0 3 MAIN (VIDEO/PRE/REC/ON SCREEN)
FROM/TO TUNER/DEMOD
TU. VIDEO
RF. VIDEO
EQ1
EQ
FROM SW/JACK
CN1403
FRONT VIDEO
5
Q4,Q5
FRONT
J1
REAR VIDEO
IN
OUT
Q2
Q3
MUTE SW
FROM/TO SERVO
V PULSE
C SYNC
D FF
R58,R59
MIX
IC1301
CV OUT
CV IN
CS
XTAL IN
S CLK
S DATA
13
15
9
2
10
11
(ON SCREEN)
FROM/TO SYSCON
V P CTL
OSD CS
S DATA
S CLK
P. MUTE
VIDEO ENV
VIDEO DATA
VIDEO CLK
TP255
C SYNC
IC1
IC2
CCD DL
CCD DL
CLK
5
8
4
6
1
Q8
BUF
Q15
BUF
Q1
BUF
TP106
PB FM
FILTER
Q19,R31,R32
L9,L10
C21,C56,C59
NOT USED
NOT USED
60
57
56
55
53
50
49
48
61
63
65
66
68
70
71
76
AUX
TU
SSB
LPF
6dB AMP
6dB AMP
SQUELCH
C. SQUELCH
CLEAR SYNC
FBC ALC
AGC
R
P
A.C.PULSE DET
REC
AGC DET
PB ALC
COMP
SEP
CLAMP
YNR
SYNC SEP.
HPF
N.C.
D.E.
DO
APT
TO 62pin
CLAMP
REC/DO
Y-LPF
ACC
N.L.EMPH DE-EMPH
R. PB C
FBC /ALC
DO DET
EDGE DELAY
MAIN DE-EMPH
SUB LPF
DEMO
DLIM
G EQ
S
N
MAIN EMPH CAR. INT. WC/DC
DL
P EQ
FM MOD
fo/DEV ADJ
S-DET
FM AGC
DET
1M HPF
629 TRAP
7M LPF
2M LPF
COLOR KILLER
FIX
N→P
KILLER DET OUT
B.D
COMP
BPF
PULS GEN
ACC DET (BURST)
HPF fh TRAP
HIFI TRAP
MAIN CONV1
MAIN CONV2
1.3M LPF
NO DL
DL
LEVEL DET2
LEVEL DET1
1.3M LPF
DL 150N
VCA
LPF
7
11
A
B
C
D
1
2
3
4
5

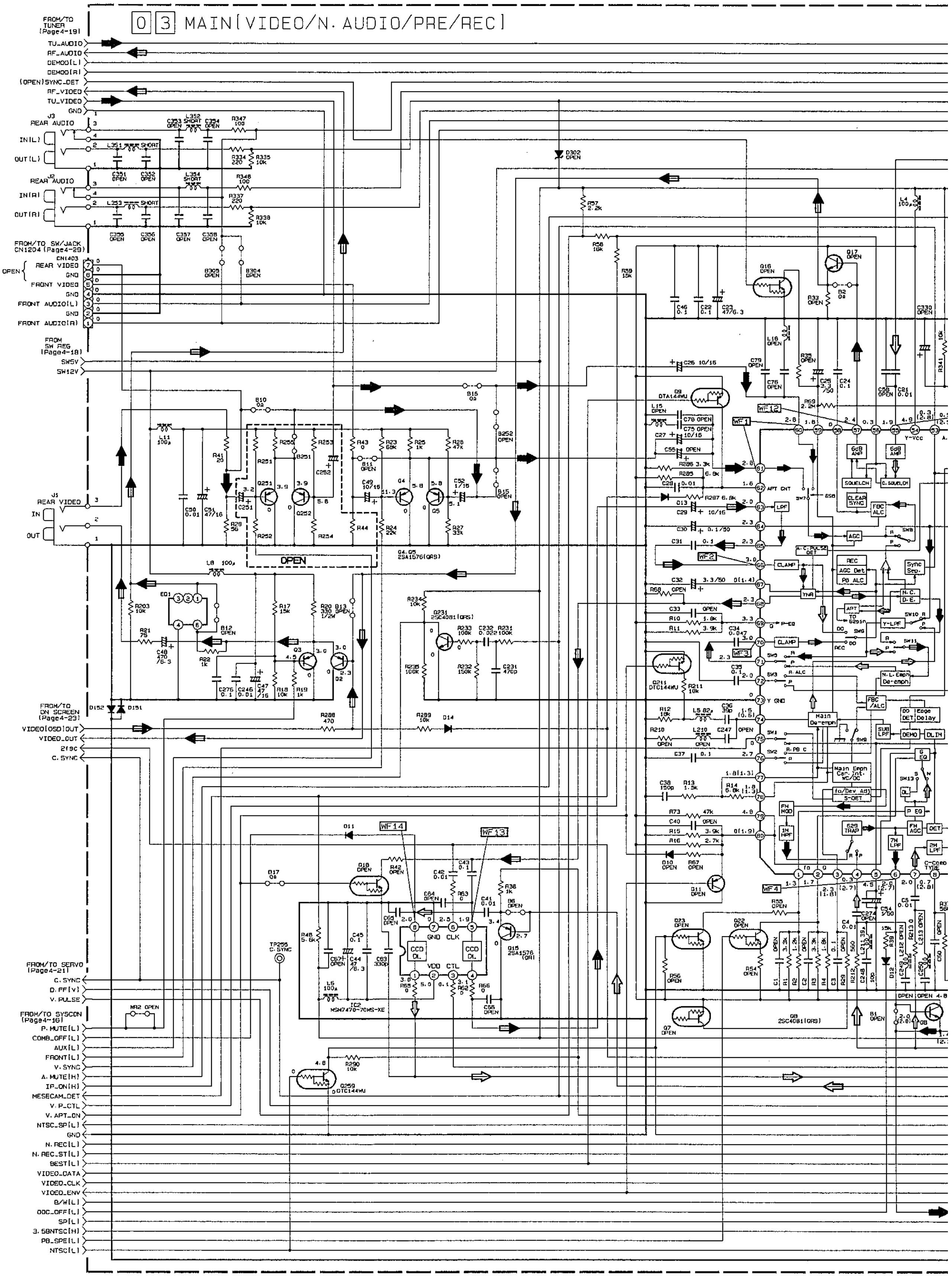

AUDIO SECTION
LINE MUTE
VCA
DET
REC MUTE
ATT
REC AMP
PB AMP
EE
PB
REC ON
EP OFF
EP ON
L1 (AUX)
L2 (TU)
46
43
42
40
39
38
37
36
35
34
31
30
28
26
24
23
X1
X2
PULSE GEN.
COLOR KILLER ID DET
APC SW1
NP CONV. REC
PB APC
REC APC
X' TAL VCO/OSC
CR DET 2fsc
C14~C16 R6,L3
FILTER
DOWN CONV.
PB/REC DISCRI
REC AFC
1/2 PHASE SW
4PHASE GEN
1/2 2fL VCO
B. E
C. K
LPF
SW30/25
SSB DATA CLK
13
15
16
17
18
Q104
BUF
Q101
BUF
TP111 DFF
MIX
R101,R113 C101,C102
VIDEO HEAD
CN1
LP CH1
LP CH2
SP CH1
SP CH2
IC101
EP REC
SP REC
SW6
PB
REC
COMP
DET
LOGIC SP/EP ENV DET AGC CONT R. MUTE
REC/PB T. PLAY
REC IDLE
ENV DET
HPF
VCA
REC ADJ
SP
EP
19
20
21
22
24
25
26
27
28
30
NOT USED
AGC DET
REC CURRENT DET

4.4 AUDIO BLOCK DIAGRAM


0 3 MAIN (FMA/N.AUDIO/PRE/REC)
IC401
NC
36
35
34
37
FROM/TO TUNER
RF AUDIO
TU AUDIO
INPUT SELECT (R CH)
PRE EMP
DE EMP
MOD
DE MOD
NOISE REDUCTION
REAR AUDIO J2
IN (R)
OUT (R)
40
41
44
43
45
48
NORMAL INPUT SELECT
MIX
OUTPUT SELECT
(NOR)
(R CH)
(L CH)
BPF
BPF
DE MOD
MOD
NOISE REDUCTION
DE EMP
PRE EMP
FROM SW/JACK
CN1403
FRONT AUDIO (R)
FRONT AUDIO (L)
1
3
INPUT SELECT (L CH)
SW CTL
MUTE CTL
1
2
3
46
NC
REAR AUDIO J3
IN (L)
OUT (L)
46
43
42
AUX
TU
LINE MUTE
DET
EE
VCA
PB
REC MUTE
DET
IC402
TO SYSCON
IND (R)
IND (L)
8
2
6
4
√COMP (C/D)
√COMP (C/D)
MUTE CTL
5
4
3
2
1
A
B
C
D


IC501
TP553
A. PB FM
1
3
9
20
17
16
PRE
PRE
PB
AGC
REC AMP
DET
CN1
AUDIO HEAD
7
8
9
CH1
CH2
24
18
20
15
14
13
NOISE DET
TANGENT
MIX
R412,R417
SW CTL
SERIAL DATA DECODER
17
16
Q503
BUF
D502,D503
R520,C518,C519
WAVE FORM
AUDIO ENV
ND
VIDEO DATA
VIDEO CLK
A. MUTE
N REC ST
N REC
FROM/TO SYSCON
A FF
FROM SERVO
52
IC1
TU
MUTE CTL
TP333
A. ERASE
T301
TRANS
6
5
OSC
Q310
POWER SW
Q307,Q308
CN302
1
2
FE HEAD
EP OFF
PB AMP
R307~R309
C307,C308
40
39
FILTER
38
REC ON
CN301
TO A/C HEAD
1
2
3
4
REC/PB
AE HEAD
L301,C313,C314
R312,R313
36
35
FILTER
EP ON
34
FILTER
R314,C315
REC AMP
Q304~Q306
PB ON

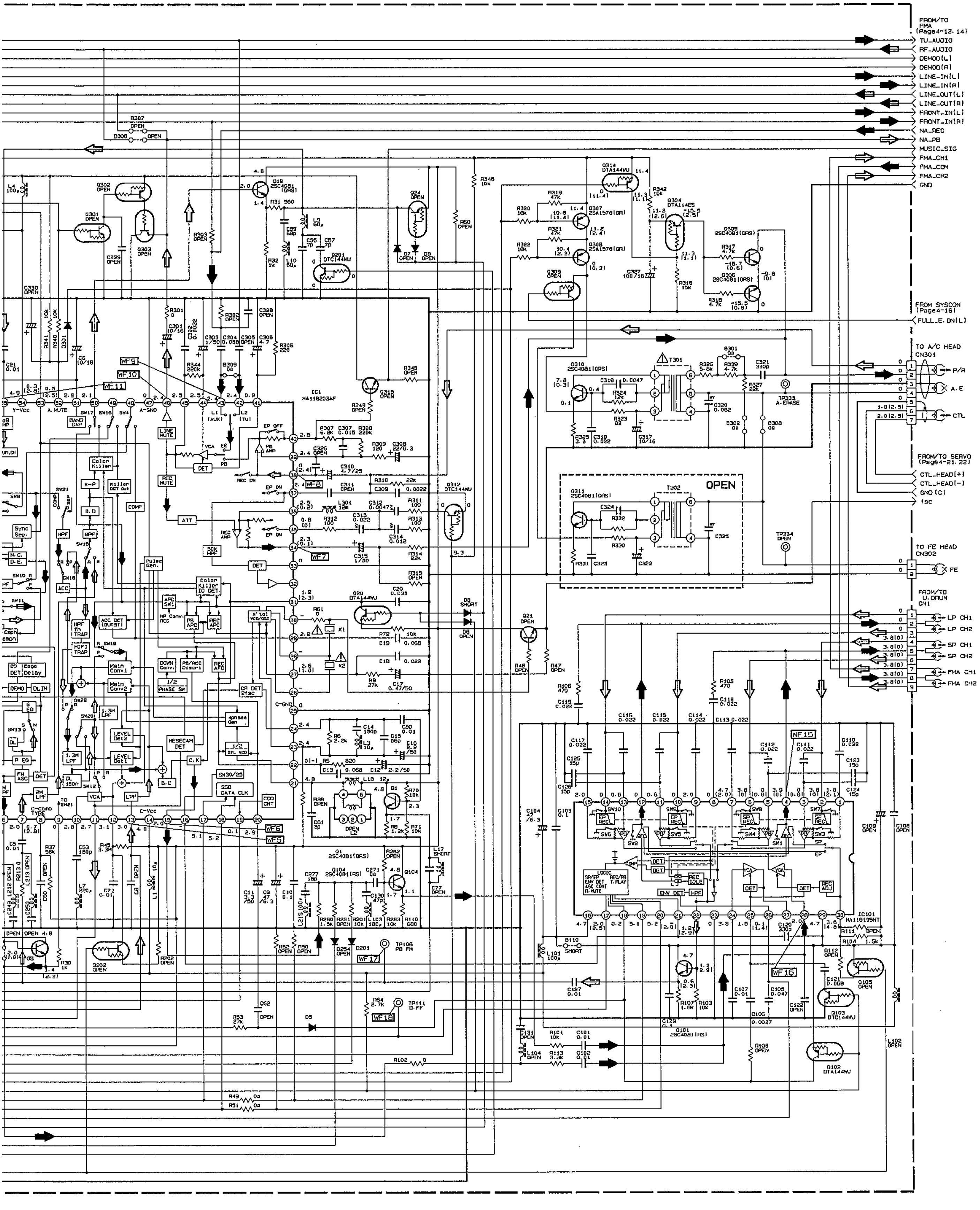
4.5 VIDEO, NORMAL AUDIO AND PRE/REC SCHEMATIC DIAGRAM


03 MAIN[VIDEO/N.AUDIO/PRE/REC]
FROM/TO TUNER (Page4-19)
TU_AUDIO
RF_AUDIO
DEMOD(L)
DEMOD(R)
(OPEN)SYNC_DET
RF_VIDEO
TU_VIDEO
GND
J3 REAR AUDIO
IN(L)
OUT(L)
J2 REAR AUDIO
IN(R)
OUT(R)
FROM/TO SW/JACK CN1204 (Page4-29)
CN1403
REAR VIDEO
GND
FRONT VIDEO
GND
FRONT AUDIO(L)
GND
FRONT AUDIO(R)
OPEN
FROM SW REG (Page4-18)
SW5V
SW12V
J1 REAR VIDEO
IN
OUT
FROM/TO ON SCREEN (Page4-23)
VIDEO(OSD)OUT
VIDEO_OUT
2fsc
C.SYNC
FROM/TO SERVO (Page4-21)
C.SYNC
D.FF(V)
V.PULSE
FROM/TO SYSCON (Page4-16)
P.MUTE(L)
COMB_OFF(L)
AUX(L)
FRONT(L)
V.SYNC
A.MUTE(H)
IP_ON(H)
MESECAM_DET
V.P_CTL
V.APT_ON
NTSC_SP(L)
GND
N.REC(L)
N.REC_ST(L)
BEST(L)
VIDEO_DATA
VIDEO_CLK
VIDEO_ENV
B/W(L)
DOC_OFF(L)
SP(L)
3.58NTSC(H)
PB_SPE(L)
NTSC(L)
OPEN
G4,G5 2SA1576(QRS)
Q231 2SC4081(QRS)
IC2 MSM7470-70MS-XE
CCD DL
VDD CTL
GND CLK
Q15 2SA1576(QR)
Q259 DTC144WU
Q211 DTC144WU
Q8 2SC4081(QRS)
TP255 C.SYNC
WF1
WF2
WF3
WF4
WF12
WF13
WF14
APT CNT
SQUELCH
CLEAR SYNC
FBC ALC
AGC
A.C.PULSE DET
CLAMP
REC AGC Det
PB ALC
Sync Sep.
N.C. D.E.
YNR
APT
TO 625sh
Y-LPF
N.L.Emph De-emph
FBC /ALC
DO DET
Edge Delay
Main De-emph
SUB LPF
DEMO
DLIM
Main Emph Car.Cnt. WC/DC
fo/Dev Adj S-DET
FM MOD
1M HPF
629 TRAP
7M LPF
2M LPF
FM AGC
DET
P EQ
G EQ
DL
C-Comb TYPE
6dB AMP
Y-Vcc
Y GND

NOTE : For VIDEO waveforms.please refer to page4-25.

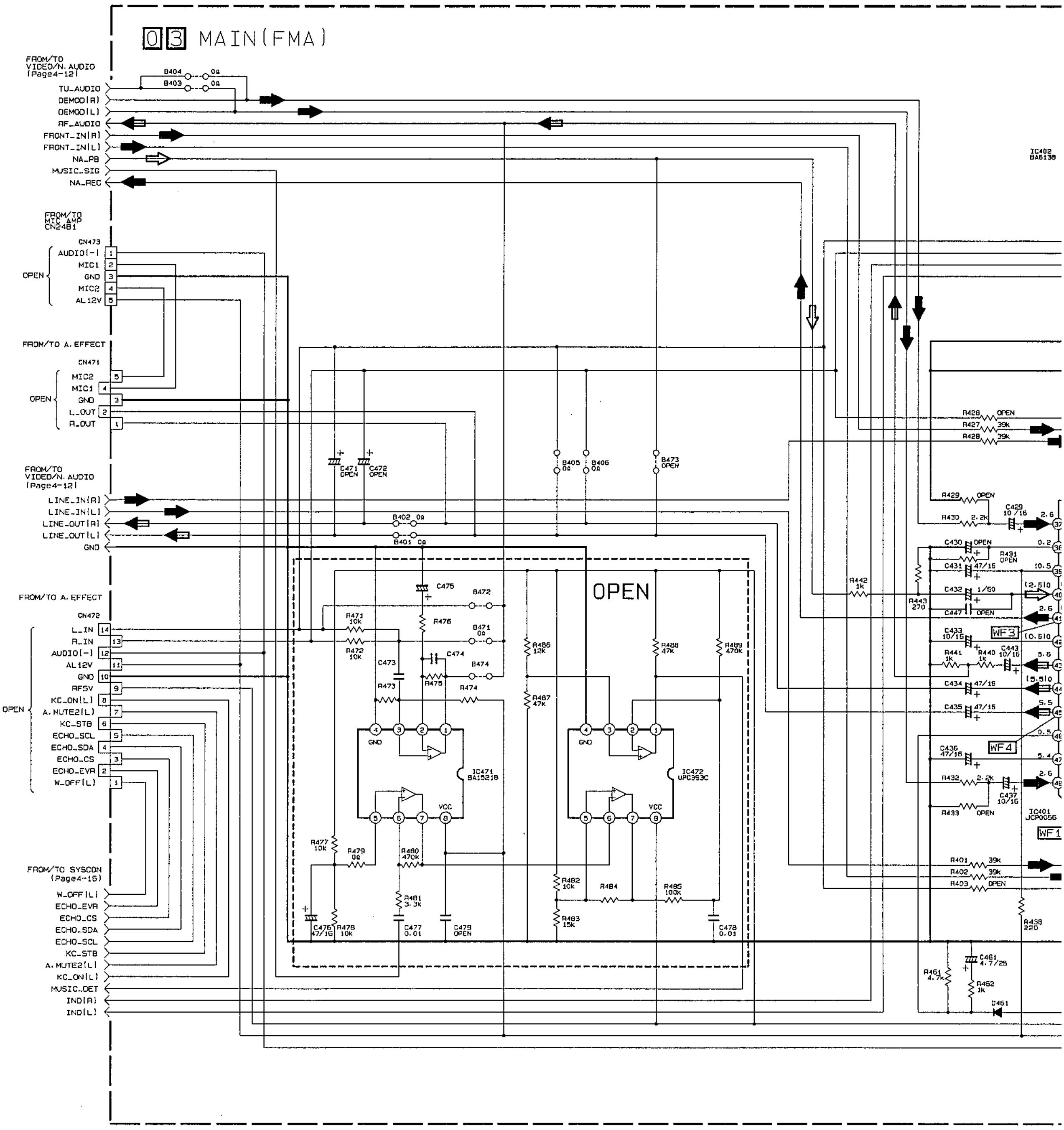
5
4
3
2
1

A
B
C
D

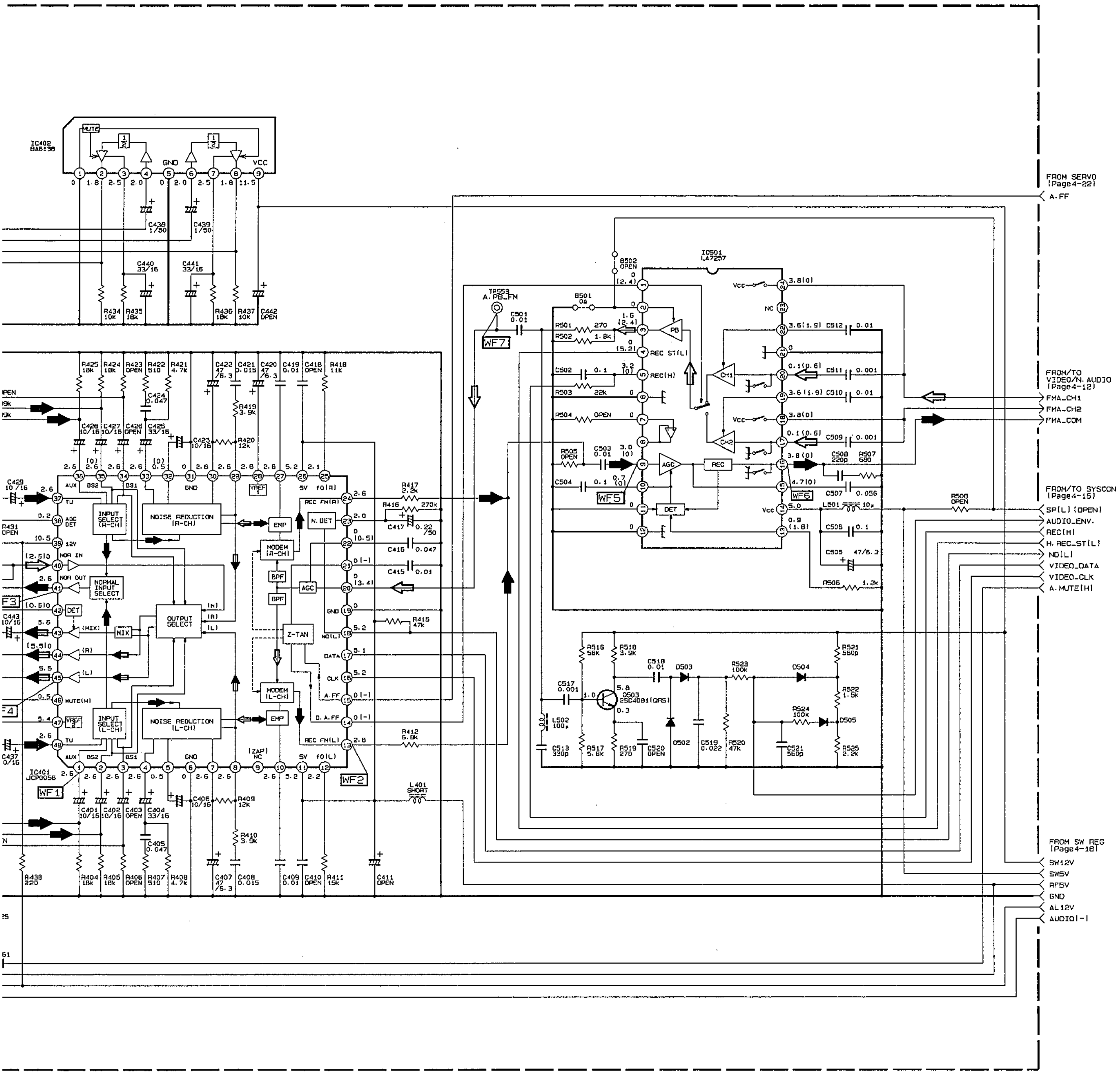

FROM/TO FMA (Page4-13,14)
TU_AUDIO
RF_AUDIO
DEMOD(L)
DEMOD(R)
LINE_IN(L)
LINE_IN(R)
LINE_OUT(L)
LINE_OUT(R)
FRONT_IN(L)
FRONT_IN(R)
NA_REC
NA_PB
MUSIC_SIG
FMA_CH1
FMA_COM
FMA_CH2
GND
FROM SYSCON (Page4-16)
FULL_E.ON(L)
TO A/C HEAD CN301
P/R
A.E
CTL
FROM/TO SERVO (Page4-21,22)
CTL_HEAD(+)
CTL_HEAD(-)
GND(C)
fsc
TO FE HEAD CN302
FE
FROM/TO U.DRUM CN1
LP CH1
LP CH2
SP CH1
SP CH2
FMA CH1
FMA CH2
IC1 HA118203AF
IC101 HA118195NT
T301
T302
OPEN
TP333 A.ERASE
TP334 OPEN
TP106 PB FM
TP111 D.FF
Q310 2SC4081(QRS)
Q311 2SC4081(QRS)
Q307 2SA1576(QR)
Q308 2SA1576(QR)
Q304 DTA114ES
Q314 DTA144WU
Q305 2SC4081(QRS)
Q306 2SC4081(QRS)
Q10 2SC4081(QRS)
Q1 2SC4081(QRS)
Q104 2SC4081(RS)
Q101 2SC4081(RS)
Q20 DTA144WU
Q312 DTC144WU
Q201 DTC144WU
Q103 DTC144WU
Q102 DTA144WU
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF15
WF16
WF17
WF18
Y-Vcc
A.MUTE
A-GND
C-Vcc
C-GND
LINE MUTE
REC MUTE
PB AMP
REC AMP
VCA
DET
ATT
Color Killer
Killer DET Out
K-P
B.D
COMP
HPF
BPF
ACC
Pulse Gen.
Color Killer ID DET
APC SW
PB APC
REC APC
ACC DET (BURST)
HPF fh TRAP
HIFI TRAP
Main Conv1
Main Conv2
DOWN Conv.
PB/REC Discri
REC AFC
1/2 PHASE SW
CR DET 2fsc
40fH
MESECAM DET
1/2 2fL VCO
X'tal VCO/OSC
C.K
B-E
SW30/25
SSB DATA CLK
CCD CNT
LEVEL Det2
LEVEL Det1
1.3M LPF
DL 150n
Sync Sep.
N.C.
D.E.
DO Edge DET
Delay
DEMO
DL IN
S EQ
P EQ
FM AGC
FM LPF
LPF
VCA
EP REC
SP REC
LOGIC SP/EP ENV DET AGC CONT A.MUTE
REC/PB T.PLAY
ENV DET
HPF
REC IDLE
REC ADJ

1 E F G H

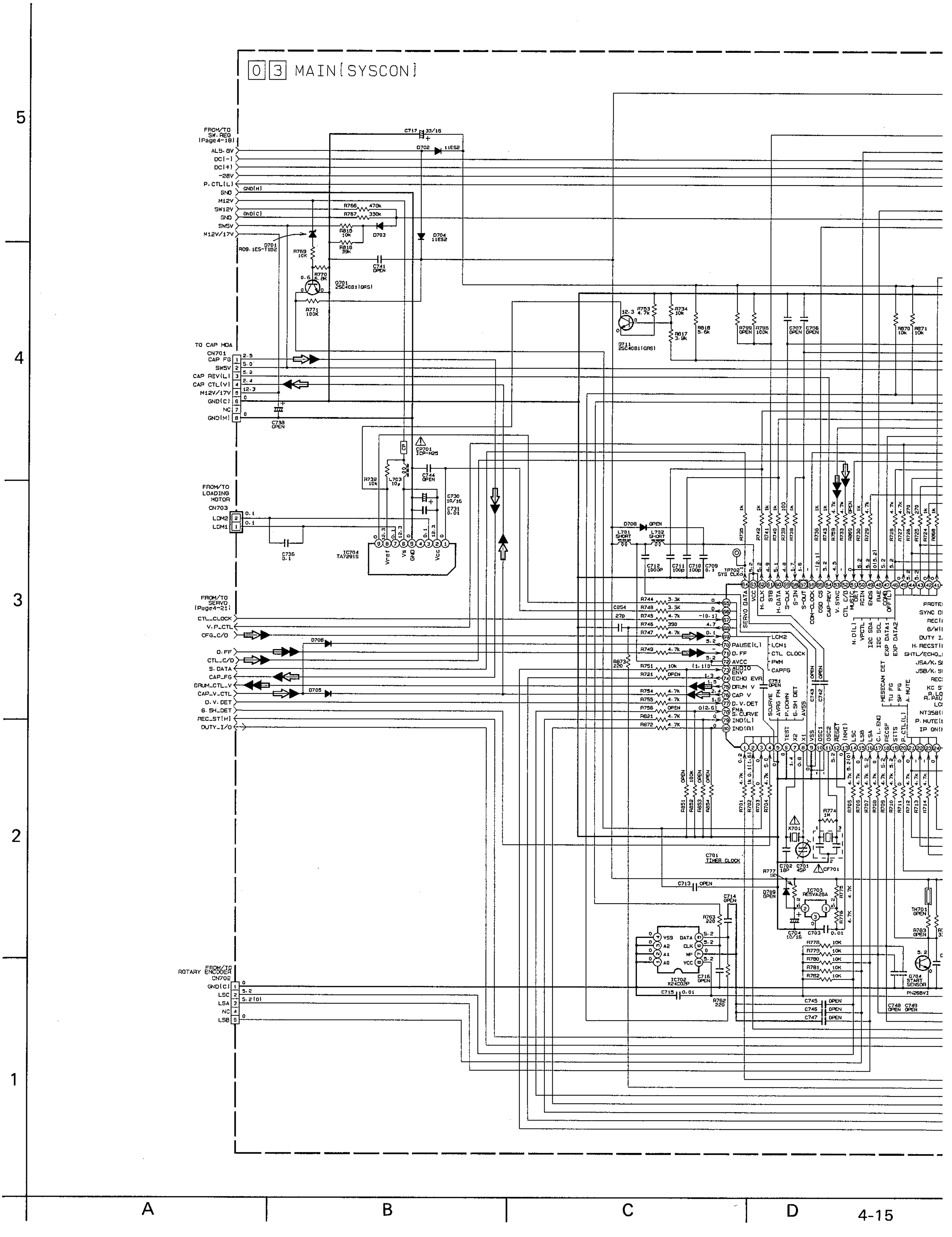
4.6 FMA SCHEMATIC DIAGRAM


03 MAIN(FMA)
FROM/TO VIDEO/N.AUDIO (Page4-12)
TU_AUDIO
DEMOD(R)
DEMOD(L)
RF_AUDIO
FRONT_IN(R)
FRONT_IN(L)
NA_PB
MUSIC_SIG
NA_REC
FROM/TO MIC AMP CN2481
CN473
AUDIO(-)
MIC1
GND
MIC2
AL12V
OPEN
FROM/TO A.EFFECT
CN471
MIC2
MIC1
GND
L_OUT
R_OUT
FROM/TO VIDEO/N.AUDIO (Page4-12)
LINE_IN(R)
LINE_IN(L)
LINE_OUT(R)
LINE_OUT(L)
GND
FROM/TO A.EFFECT
CN472
L_IN
R_IN
AUDIO(-)
AL12V
GND
RF5V
KC_ON(L)
A.MUTE2(L)
KC_STB
ECHO_SCL
ECHO_SDA
ECHO_CS
ECHO_EVR
W_OFF(L)
FROM/TO SYSCON (Page4-16)
W_OFF(L)
ECHO_EVR
ECHO_CS
ECHO_SDA
ECHO_SCL
KC_STB
A.MUTE2(L)
KC_ON(L)
MUSIC_DET
IND(R)
IND(L)
B404 0Ω
B403 0Ω
B402 0Ω
B401 0Ω
B405 0Ω
B406 0Ω
B473 OPEN
C471 OPEN
C472 OPEN
OPEN
C475
B472
R471 10k
R476
B471 0Ω
R472 10k
C473
C474
B474
R473
R475
R474
R486 12k
R487 47k
R488 47k
R489 470k
GND
VCC
IC471 BA15218
IC472 UPC393C
R477 10k
R479 0Ω
R480 470k
R481 3.3k
C476 47/16
R478 10k
C477 0.01
C479 OPEN
R482 10k
R483 15k
R484
R485 100k
C478 0.01
IC402 BA6138
R426 OPEN
R427 39K
R428 39K
R429 OPEN
C429 10/16
R430 2.2K
C430 OPEN
R431 OPEN
C431 47/16
C432 1/50
R442 1K
R443 270
C447 OPEN
C433 10/16
WF3
R441 1K
R440 1K
C443 10/16
C434 47/16
C435 47/16
C436 47/16
WF4
R432 2.2K
C437 10/16
R433 OPEN
IC401 JCP0056
WF1
R401 39K
R402 39K
R403 OPEN
R438 220
C461 4.7/25
R461 4.7K
R462 1K
D461
2.6
0.2
10.5
(2.5)
2.6
(0.5)
5.6
(5.5)
5.5
0.5
5.4
2.6

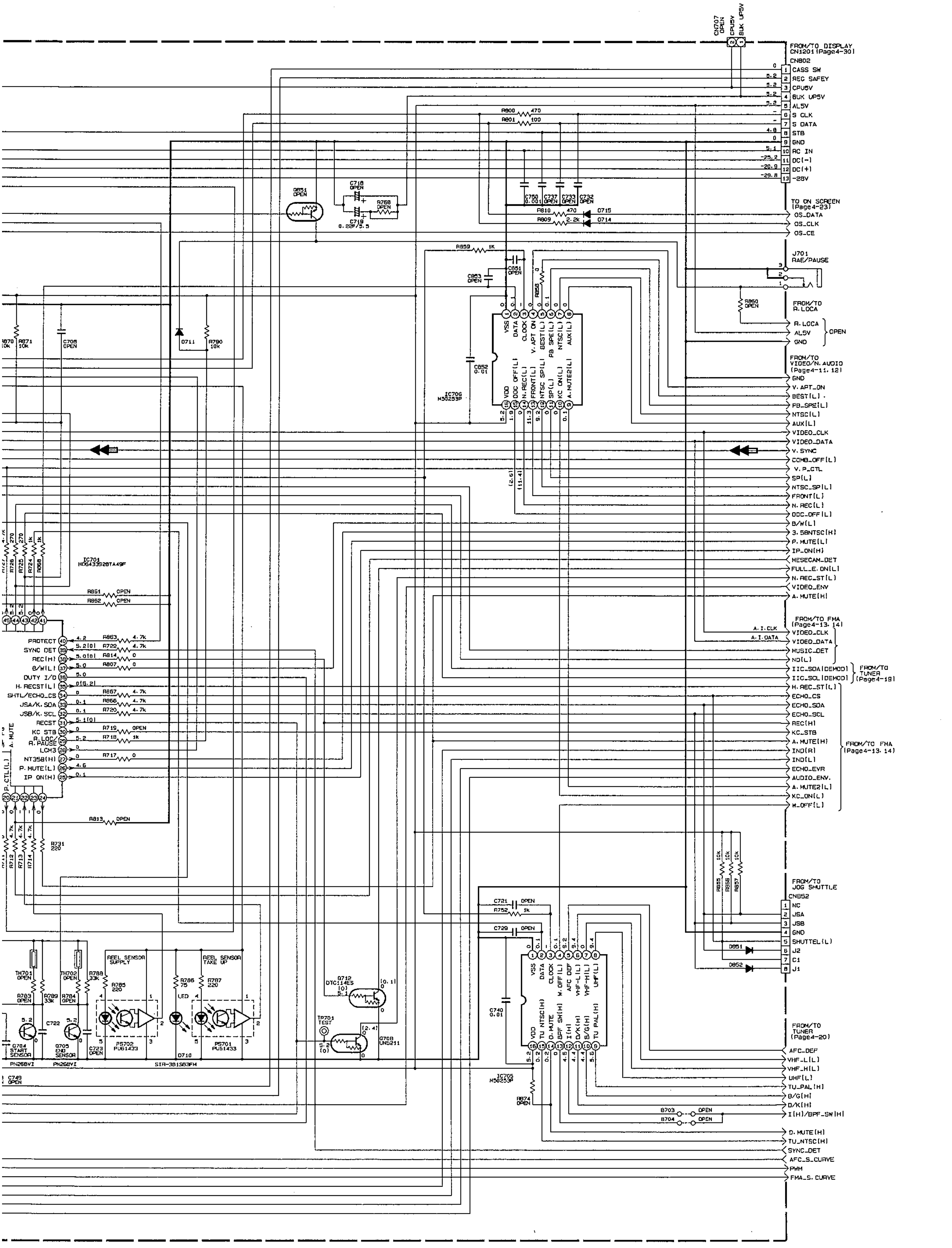
NOTE: For FMA waveforms,please refer to page4-25.


IC402 BA6138
MUTE
GND
VCC
C438 1/50
C439 1/50
C440 33/16
C441 33/16
R434 10k
R435 18k
R436 18k
R437 10k
C442 OPEN
IC401 JCP0056
INPUT SELECT (R-CH)
INPUT SELECT (L-CH)
NOISE REDUCTION (R-CH)
NOISE REDUCTION (L-CH)
NORMAL INPUT SELECT
OUTPUT SELECT
MIX
DET
EMP
N. DET
MODEM (R-CH)
MODEM (L-CH)
BPF
AGC
Z-TAN
WF1
WF2
WF3
WF4
WF5
WF6
WF7
TP553 A.PB_FM
IC501 LA7257
PB
REC ST(L)
REC(H)
CH1
CH2
AGC
REC
DET
Q503 2SC4081(QRS)
D502
D503
D504
D505
L401 SHORT
L501
L502 100μ
FROM SERVO (Page4-22)
A.FF
FROM/TO VIDEO/N.AUDIO (Page4-12)
FMA_CH1
FMA_CH2
FMA_COM
FROM/TO SYSCON (Page4-15)
SP(L) (OPEN)
AUDIO_ENV.
REC(H)
H.REC_ST(L)
ND(L)
VIDEO_DATA
VIDEO_CLK
A.MUTE(H)
FROM SW REG (Page4-18)
SW12V
SW5V
RF5V
GND
AL12V
AUDIO(-)

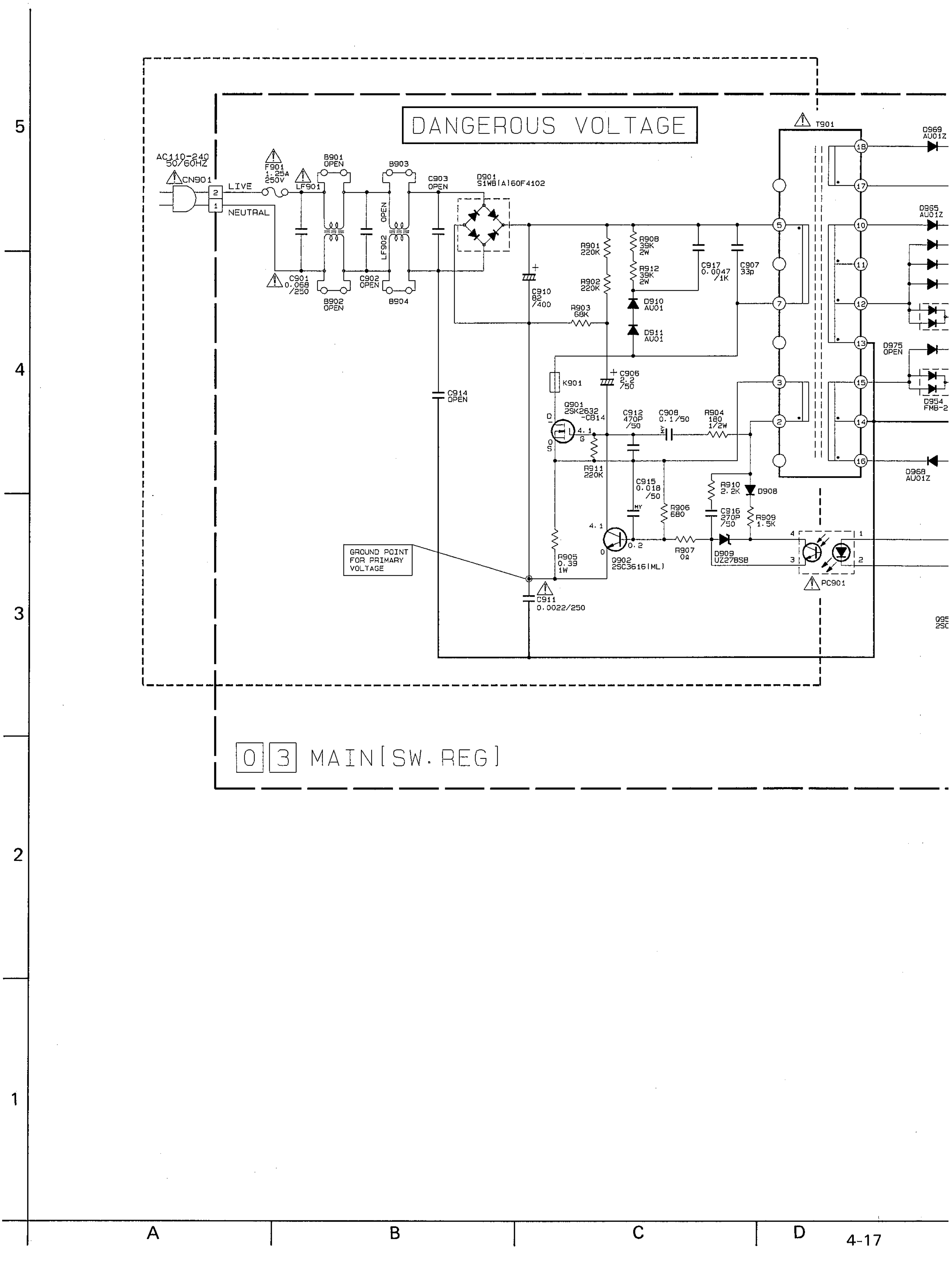
4.7 SYSTEM CONTROL SCHEMATIC DIAGRAM

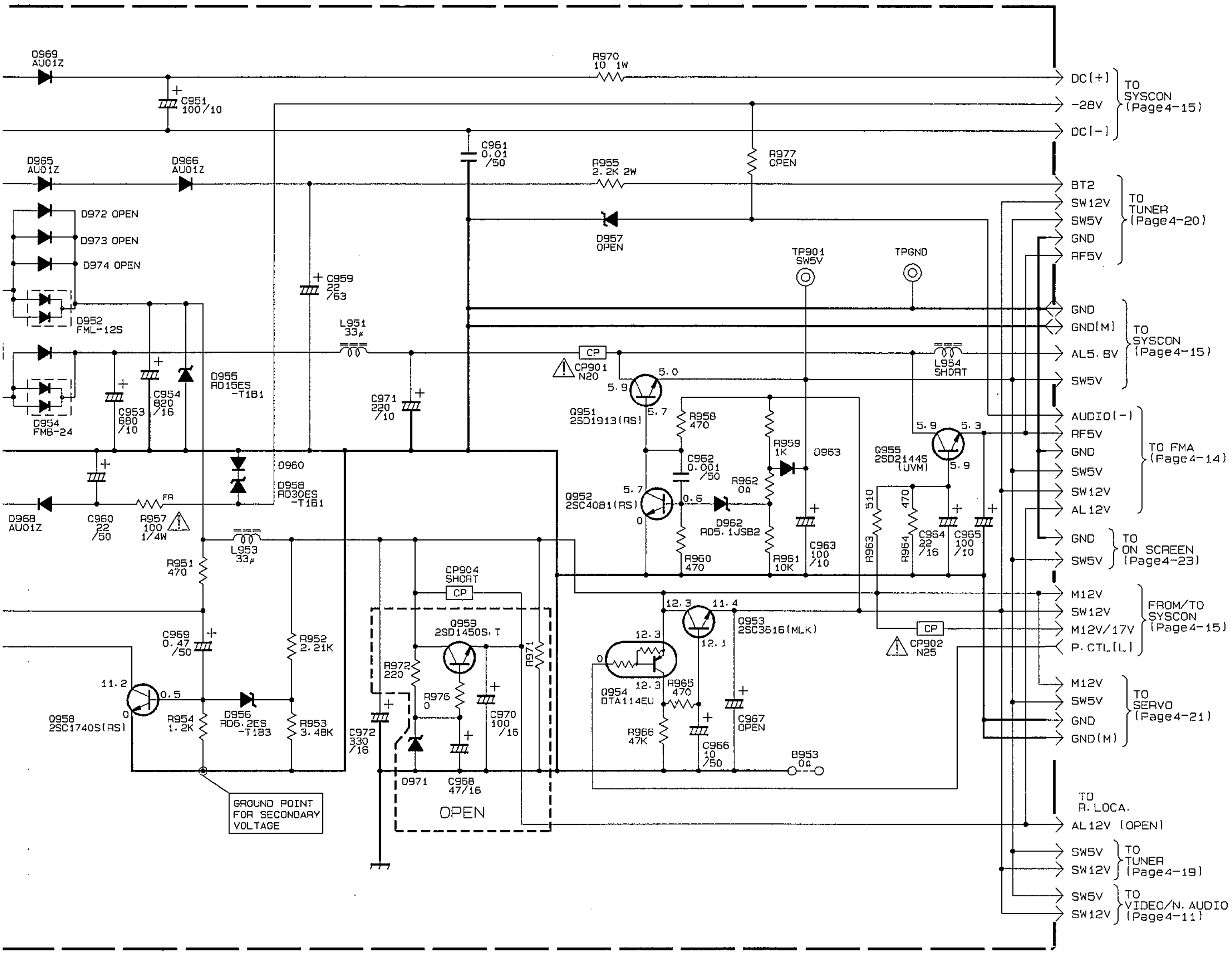


03 MAIN[SYSCON]
FROM/TO SW.REG [Page4-18]
AL5.8V
DC(-)
DC(+)
-28V
P.CTL(L)
GND
M12V
SW12V
GND
SW5V
M12V/17V
TO CAP MDA
CN701
CAP FG
SW5V
CAP REV(L)
CAP CTL(V)
M12V/17V
GND(C)
NC
GND(M)
C738 OPEN
FROM/TO LOADING MOTOR
CN703
LCM2
LCM1
C736 0.1
IC704 TA7291S
CP701 ICP-N25
FROM/TO SERVO [Page4-21]
CTL_CLOCK
V.P_CTL
CFG_C/O
D.FF
CTL_C/D
S.DATA
CAP_FG
DRUM_CTL_V
CAP_V_CTL
D.V.DET
6.5H_DET
REC_ST(H)
DUTY_I/O
Q701 2SC4081(QRS)
Q711 2SC4081(QRS)
D701 RD9.1ES-T1B2
D702 11ES2
D704 11ES2
D703
D705
D706
D708 OPEN
C717 33/16
L701 SHORT
L702 SHORT
TP702 SYS CLK
PAUSE(L)
D.FF
AVCC
AUDIO ENV
ECHO EVR
DRUM V
CAP V
D.V.DET
FMA
S.CURVE
IND(L)
IND(R)
LCM2
LCM1
CTL CLOCK
PWM
CAPFG
X701
C701 TIMER CLOCK
IC703 RESVA28A
IC702 X24C02P
VSS
A2
A1
A0
DATA
CLK
WP
VCC
FROM/TO ROTARY ENCODER
CN702
GND(C)
LSC
LSA
NC
LSB
TH701 OPEN
Q704 START SENSOR PN268VI
5
4
3
2
1
A
B
C
D

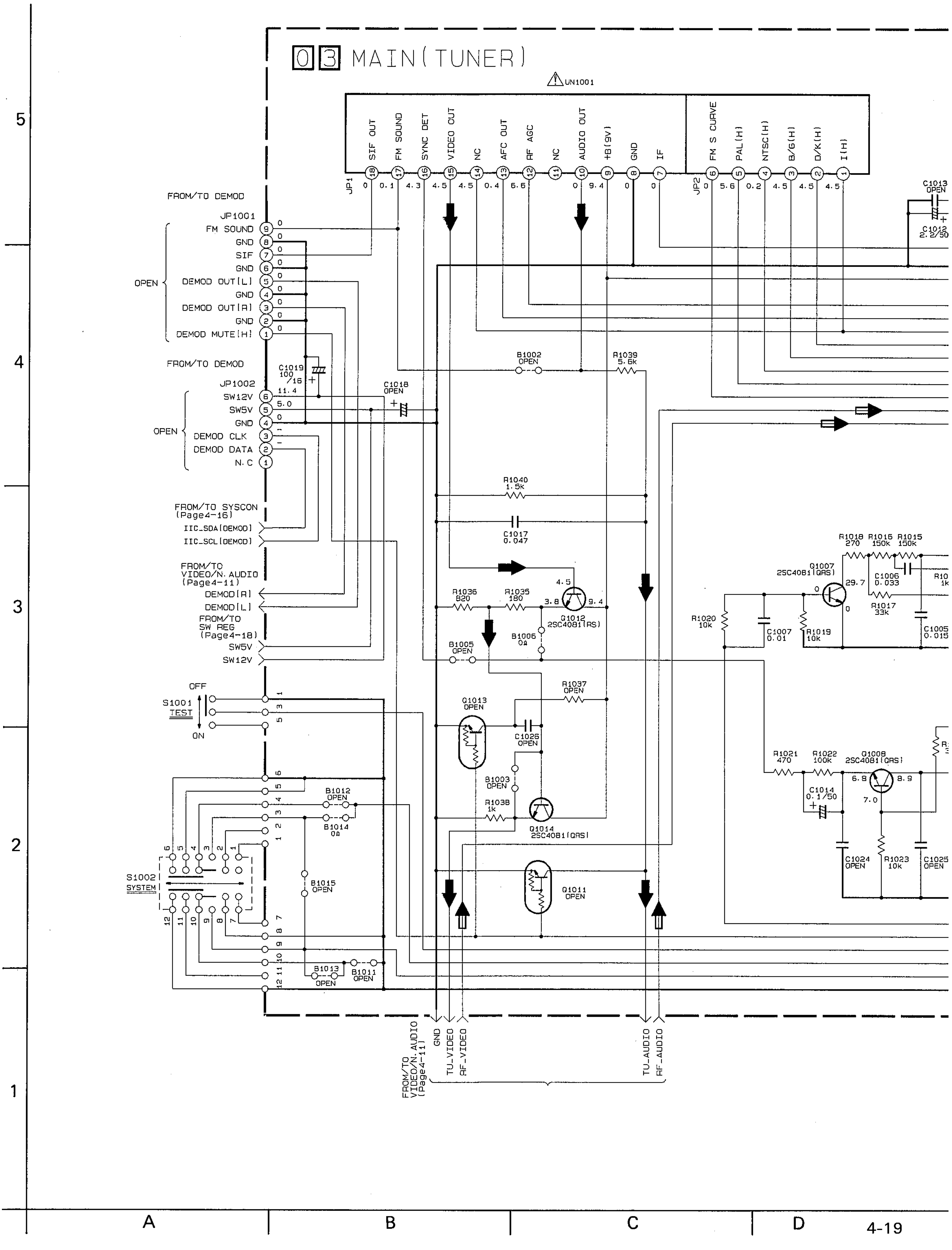

CN707 OPEN
CPU5V
BUK UP5V
FROM/TO DISPLAY CN1201(Page4-30)
CN802
1 CASS SW
2 REC SAFEY
3 CPU5V
4 BUK UP5V
5 AL5V
6 S CLK
7 S DATA
8 STB
9 GND
10 RC IN
11 DC(-)
12 DC(+)
13 -28V
R800 470
R801 100
Q851 OPEN
C718 OPEN
R768 OPEN
C719 0.22F/5.5
C750 0.001
C737 OPEN
C733 OPEN
C732 OPEN
R810 470
R809 2.2k
D715
D714
TO ON SCREEN (Page4-23)
OS_DATA
OS_CLK
OS_CE
R859 1k
C851 OPEN
C853 OPEN
R858
J701 RAE/PAUSE
R860 OPEN
FROM/TO R.LOCA
R.LOCA
AL5V
GND
OPEN
VSS
DATA
CLOCK
V.APT ON
BEST(L)
PB SPE(L)
NTSC(L)
AUX(L)
VDD
OCC OFF(L)
N.REC(L)
FRONT(L)
NTSC SP(L)
SP(L)
KC ON(L)
A.MUTE2(L)
C852 0.01
IC706 M50253P
FROM/TO VIDEO/N.AUDIO (Page4-11,12)
GND
V.APT_ON
BEST(L)
PB_SPE(L)
NTSC(L)
AUX(L)
VIDEO_CLK
VIDEO_DATA
V.SYNC
COMB_OFF(L)
V.P_CTL
SP(L)
NTSC_SP(L)
FRONT(L)
N.REC(L)
OCC_OFF(L)
B/W(L)
3.58NTSC(H)
P.MUTE(L)
IP_ON(H)
MESECAM_DET
FULL_E.ON(L)
N.REC_ST(L)
VIDEO_ENV
A.MUTE(H)
R870 10k
R871 10k
C708 OPEN
D711
R790 10k
IC701 HD6433928TA49F
R891 OPEN
R892 OPEN
PROTECT
SYNC DET
REC(H)
B/W(L)
DUTY I/O
H.RECST(L)
SHTL/ECHO_CS
JSA/K.SDA
JSB/K.SCL
RECST
KC STB
R.LOC/R.PAUSE
LCM3
NT358(H)
P.MUTE(L)
IP ON(H)
A.MUTE
P.CTL(L)
R863 4.7k
R722 4.7k
R814 0
R807 0
R867 4.7k
R866 4.7k
R720 4.7k
R719 OPEN
R718 1k
R717 0
R813 OPEN
R712
R713
R714
R731 220
A.I.CLK
A.I.DATA
FROM/TO FMA (Page4-13,14)
VIDEO_CLK
VIDEO_DATA
MUSIC_DET
ND(L)
IIC_SDA(DEMOD)
IIC_SCL(DEMOD)
FROM/TO TUNER (Page4-19)
H.REC_ST(L)
ECHO_CS
ECHO_SDA
ECHO_SCL
REC(H)
KC_STB
A.MUTE(H)
IND(R)
IND(L)
ECHO_EVR
AUDIO_ENV.
A.MUTE2(L)
KC_ON(L)
H_OFF(L)
FROM/TO FMA (Page4-13,14)
R855 10k
R856 10k
R857 10k
FROM/TO JOG SHUTTLE
CN852
1 NC
2 JSA
3 JSB
4 GND
5 SHUTTEL(L)
6 J2
7 C1
8 J1
D851
D852
C721 OPEN
R752 1k
C729 OPEN
VSS
DATA
CLOCK
W.OFF(L)
AFC DEF
VHF-L(L)
VHF-H(L)
UHF(L)
VDD
TU NTSC(H)
D.MUTE
BPF SW(H)
I(H)
D/K(H)
B/G(H)
TU PAL(H)
C740 0.01
IC705 M50253P
R874 OPEN
FROM/TO TUNER (Page4-20)
AFC_DEF
VHF_L(L)
VHF_H(L)
UHF(L)
TU_PAL(H)
B/G(H)
D/K(H)
I(H)/BPF_SW(H)
R703 OPEN
R704 OPEN
D.MUTE(H)
TU_NTSC(H)
SYNC_DET
AFC_S_CURVE
PWM
FMA_S.CURVE
TH701 OPEN
TH702 OPEN
R788 33k
REEL SENSOR SUPPLY
R785 220
R786 75
LED
REEL SENSOR TAKE UP
R787 220
R783 OPEN
R789 33k
R784 OPEN
C722
Q704 START SENSOR
Q705 END SENSOR
C723 OPEN
PS702 PU61433
D710
PS701 PU61433
PN268VI
PN268VI
SIR-381583FM
C749 OPEN
Q712 DTC114ES
TP701 TEST
Q708 UN5211
E
F
G
H

4.8 SWITCHING REGULATOR SCHEMATIC DIAGRAM

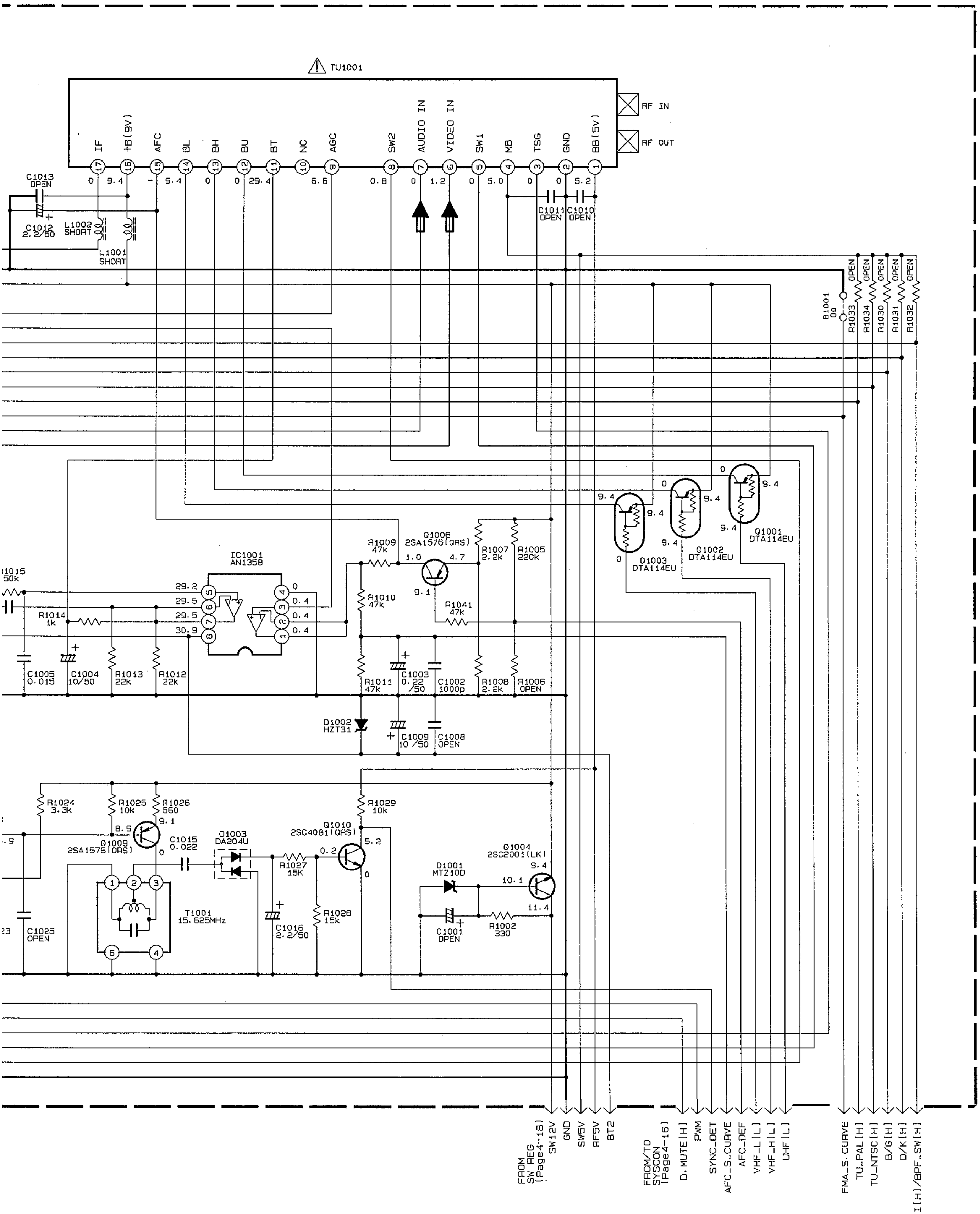

DANGEROUS VOLTAGE
AC110-240 50/60HZ
CN901
2
1
LIVE
NEUTRAL
F901 1.25A 250V
LF901
B901 OPEN
B903
OPEN
LF902
C903 OPEN
D901 S1WB(A)60F4102
C901 0.068 /250
B902 OPEN
C902 OPEN
B904
C910 82 /400
R901 220K
R908 39K 2W
R912 39K 2W
R902 220K
C917 0.0047 /1K
C907 33p
D910 AU01
D911 AU01
R903 68K
K901
C906 2.2 /50
C914 OPEN
Q901 2SK2632 -CB14
D
G
S
4.1
0
C912 470P /50
C908 0.1/50
R904 180 1/2W
R911 220K
C915 0.018 /50
MY
R906 680
R910 2.2K
D908
C916 270P /50
R909 1.5K
R905 0.39 1W
Q902 2SC3616(ML)
0.2
R907 0Ω
D909 UZ27BSB
PC901
1
2
3
4
GROUND POINT FOR PRIMARY VOLTAGE
C911 0.0022/250
T901
18
17
5
10
11
7
12
13
3
15
2
14
16
D969 AU01Z
D965 AU01Z
D975 OPEN
D954 FMB-2
D968 AU01Z
Q95
2SC
03 MAIN(SW.REG)
5
4
3
2
1
A
B
C
D


D969 AU01Z
C951 100/10
R970 10 1W
DC(+)
-28V
DC(-)
TO SYSCON (Page4-15)
D965 AU01Z
D966 AU01Z
C961 0.01 /50
R955 2.2K 2W
R977 OPEN
BT2
SW12V
SW5V
GND
RF5V
TO TUNER (Page4-20)
D972 OPEN
D973 OPEN
D974 OPEN
D957 OPEN
TP901 SW5V
TPGND
C959 22 /63
D952 FML-12S
L951 33μ
GND
GND(M)
AL5.8V
SW5V
TO SYSCON (Page4-15)
CP
CP901 N20
L954 SHORT
5.0
5.9
5.7
D954 FMB-24
C953 680 /10
C954 820 /16
D955 RD15ES -T1B1
C971 220 /10
Q951 2SD1913(RS)
R958 470
R959 1K
D963
Q955 2SD2144S (UVM)
5.9
5.3
5.9
AUDIO(-)
RF5V
GND
SW5V
SW12V
AL12V
TO FMA (Page4-14)
C962 0.001 /50
R962 0Ω
D960
D958 RD30ES -T1B1
Q952 2SC4081(RS)
5.7
0.6
0
D962 RD5.1JSB2
510
470
R963
R964
C964 22 /16
C965 100 /10
C963 100 /10
R960 470
R961 10K
D968 AU01Z
C960 22 /50
R957 100 1/4W
FR
L953 33μ
R951 470
GND
SW5V
TO ON SCREEN (Page4-23)
CP904 SHORT
CP
M12V
SW12V
M12V/17V
P.CTL(L)
FROM/TO SYSCON (Page4-15)
12.3
11.4
Q953 2SC3616(MLK)
12.1
CP
CP902 N25
C969 0.47 /50
R952 2.21K
Q959 2SD1450S,T
R971
12.3
0
Q954 DTA114EU
12.3
R965 470
11.2
0.5
Q958 2SC1740S(RS)
R954 1.2K
D956 RD6.2ES -T1B3
R953 3.48K
R972 220
R976 0
C970 100 /16
C972 330 /16
R966 47K
C966 10 /50
C967 OPEN
M12V
SW5V
GND
GND(M)
TO SERVO (Page4-21)
B953 0Ω
D971
C968 47/16
OPEN
GROUND POINT FOR SECONDARY VOLTAGE
TO R.LOCA.
AL12V (OPEN)
SW5V
SW12V
TO TUNER (Page4-19)
SW5V
SW12V
TO VIDEO/N.AUDIO (Page4-11)

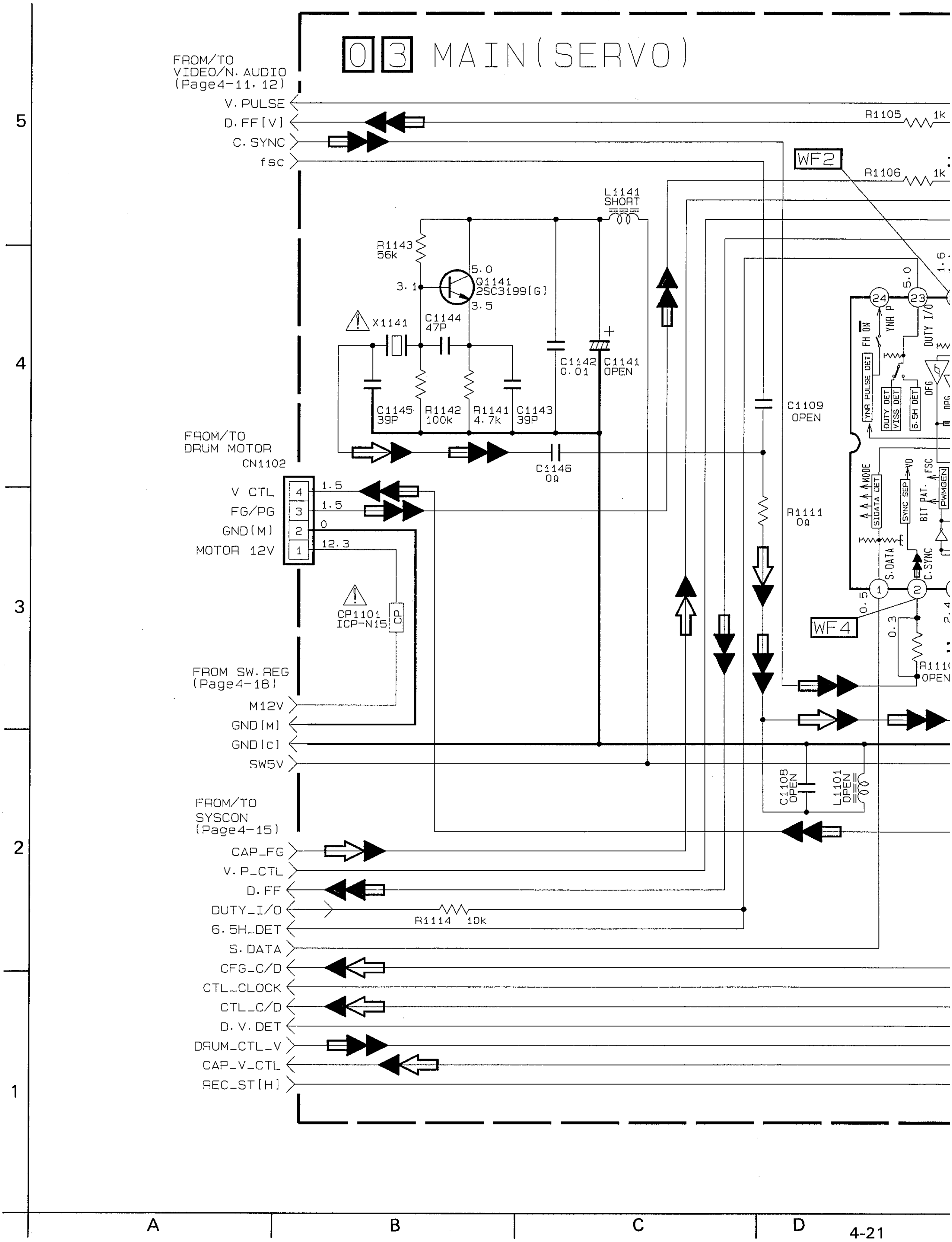
4.9 TUNER SCHEMATIC DIAGRAM



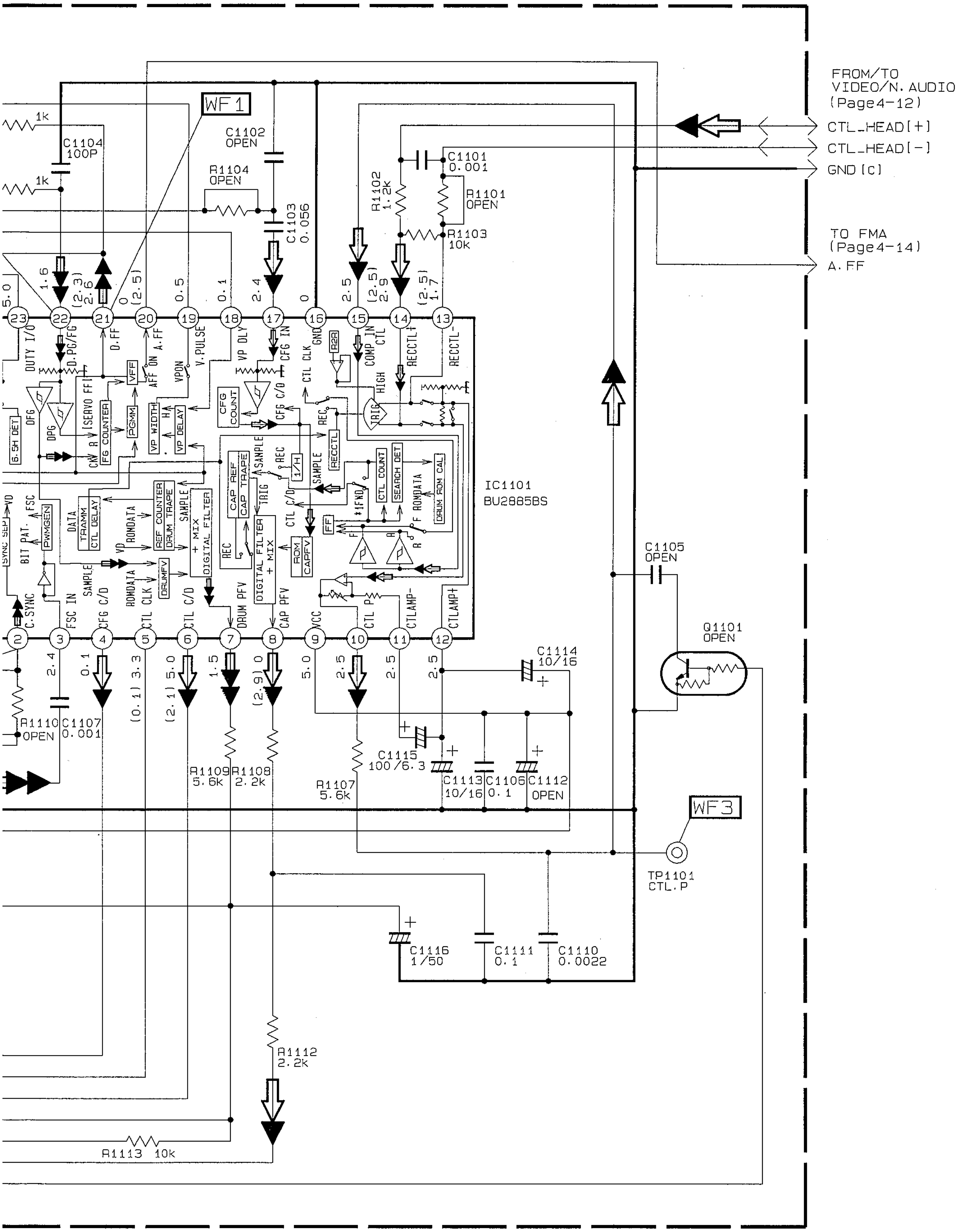
03 MAIN(TUNER)
UN1001
SIF OUT
FM SOUND
SYNC DET
VIDEO OUT
NC
AFC OUT
RF AGC
NC
AUDIO OUT
+B(9V)
GND
IF
FM S CURVE
PAL(H)
NTSC(H)
B/G(H)
D/K(H)
I(H)
JP1
JP2
C1013 OPEN
C1012 2.2/50
FROM/TO DEMOD
JP1001
FM SOUND
GND
SIF
GND
DEMOD OUT(L)
GND
DEMOD OUT(R)
GND
DEMOD MUTE(H)
OPEN
FROM/TO DEMOD
JP1002
SW12V
SW5V
GND
DEMOD CLK
DEMOD DATA
N.C
OPEN
C1019 100/16
C1018 OPEN
B1002 OPEN
R1039 5.6k
R1040 1.5k
C1017 0.047
FROM/TO SYSCON (Page4-16)
IIC_SDA(DEMOD)
IIC_SCL(DEMOD)
FROM/TO VIDEO/N.AUDIO (Page4-11)
DEMOD(R)
DEMOD(L)
FROM/TO SW REG (Page4-18)
SW5V
SW12V
R1036 820
R1035 180
Q1012 2SC4081(RS)
B1006 0Ω
B1005 OPEN
R1018 270
R1016 150k
R1015 150k
Q1007 2SC4081(QRS)
C1006 0.033
R1017 33k
R1020 10k
C1007 0.01
R1019 10k
C1005 0.015
S1001 TEST
OFF
ON
R1037 OPEN
Q1013 OPEN
C1026 OPEN
B1003 OPEN
R1038 1k
Q1014 2SC4081(QRS)
B1012 OPEN
B1014 0Ω
S1002 SYSTEM
B1015 OPEN
Q1011 OPEN
R1021 470
R1022 100k
Q1008 2SC4081(QRS)
C1014 0.1/50
C1024 OPEN
R1023 10k
C1025 OPEN
B1013 OPEN
B1011 OPEN
FROM/TO VIDEO/N.AUDIO (Page4-11)
GND
TU_VIDEO
RF_VIDEO
TU_AUDIO
RF_AUDIO
A
B
C
D
1
2
3
4
5


TU1001
RF IN
RF OUT
IF
+B(9V)
AFC
BL
BH
BU
BT
NC
AGC
SW2
AUDIO IN
VIDEO IN
SW1
MB
TSG
GND
BB(5V)
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
9.4
-
9.4
0
0
29.4
6.6
0.8
0
1.2
0
5.0
0
0
5.2
C1013 OPEN
C1012 2.2/50
L1002 SHORT
L1001 SHORT
C1011 OPEN
C1010 OPEN
B1001 00
R1033 OPEN
R1034 OPEN
R1030 OPEN
R1031 OPEN
R1032 OPEN
Q1001 DTA114EU
Q1002 DTA114EU
Q1003 DTA114EU
9.4
0
IC1001 AN1358
29.2
29.5
29.5
30.9
0.4
0.4
0.4
R1015 50K
R1014 1k
C1005 0.015
C1004 10/50
R1013 22k
R1012 22k
R1009 47k
Q1006 2SA1576(QRS)
1.0
4.7
9.1
R1010 47k
R1041 47k
R1007 2.2k
R1005 220K
R1011 47k
C1003 0.22/50
C1002 1000p
R1008 2.2k
R1006 OPEN
D1002 HZT31
C1009 10/50
C1008 OPEN
R1024 3.3k
R1025 10k
R1026 560
8.9
9.1
Q1009 2SA1576(QRS)
C1015 0.022
D1003 DA204U
C1025 OPEN
T1001 15.625MHz
R1027 15K
C1016 2.2/50
R1028 15k
R1029 10k
Q1010 2SC4081(QRS)
0.2
5.2
D1001 MTZ10D
C1001 OPEN
Q1004 2SC2001(LK)
10.1
11.4
R1002 330
FROM SW REG (Page4-18)
SW12V
GND
SW5V
RF5V
BT2
FROM/TO SYSCON (Page4-16)
D.MUTE[H]
PWM
SYNC_DET
AFC_S_CURVE
AFC_DEF
VHF_L[L]
VHF_H[L]
UHF[L]
FMA_S.CURVE
TU_PAL[H]
TU_NTSC[H]
B/G[H]
D/K[H]
I[H]/BPF_SW[H]

4.10 SERVO SCHEMATIC DIAGRAM

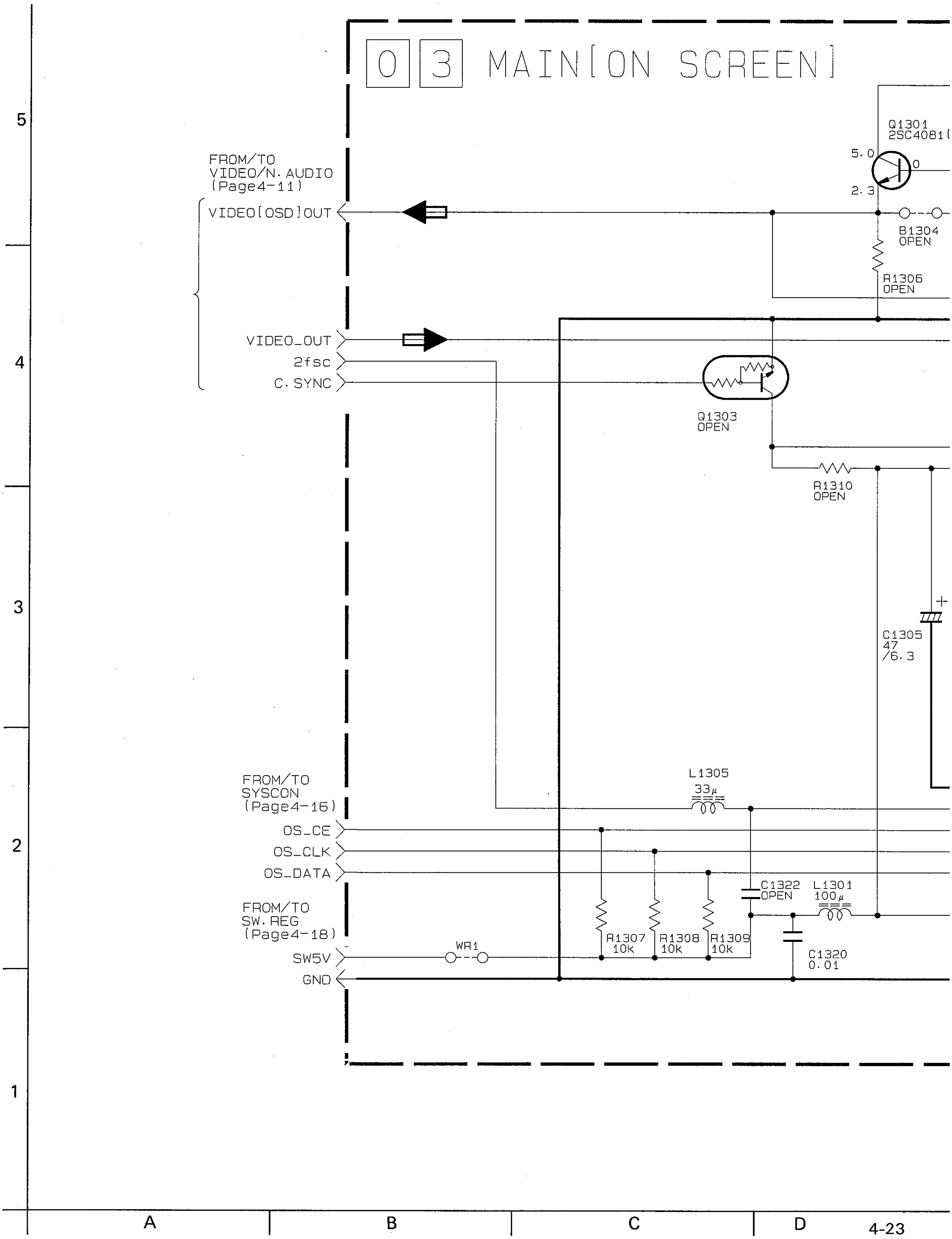


03 MAIN(SERVO)
FROM/TO VIDEO/N.AUDIO (Page4-11, 12)
V.PULSE
D.FF[V]
C.SYNC
fsc
R1105 1k
R1106 1k
WF2
L1141 SHORT
R1143 56k
3.1
5.0
Q1141 2SC3199[G]
3.5
X1141
C1144 47P
C1142 0.01
C1141 OPEN
C1145 39P
R1142 100k
R1141 4.7k
C1143 39P
C1109 OPEN
C1146 0Ω
R1111 0Ω
FROM/TO DRUM MOTOR
CN1102
V CTL
FG/PG
GND(M)
MOTOR 12V
4
3
2
1
1.5
1.5
0
12.3
CP1101 ICP-N15
CP
FROM SW.REG (Page4-18)
M12V
GND[M]
GND[c]
SW5V
C1108 OPEN
L1101 OPEN
FROM/TO SYSCON (Page4-15)
CAP_FG
V.P_CTL
D.FF
DUTY_I/O
6.5H_DET
S.DATA
CFG_C/D
CTL_CLOCK
CTL_C/D
D.V.DET
DRUM_CTL_V
CAP_V_CTL
REC_ST[H]
R1114 10k
1.6
5.0
24
23
YNR P
DUTY I/O
FH ON
YNR PULSE DET
DUTY DET
VISS DET
6.5H DET
DFG
DPG
MODE
SIDATA DET
SYNC SEP
VD
FSC
BIT PAT.
PWMGEN
S.DATA
C.SYNC
1
2
0.5
2.4
0.3
WF4
R1110
OPEN
5
4
3
2
1
A
B
C
D

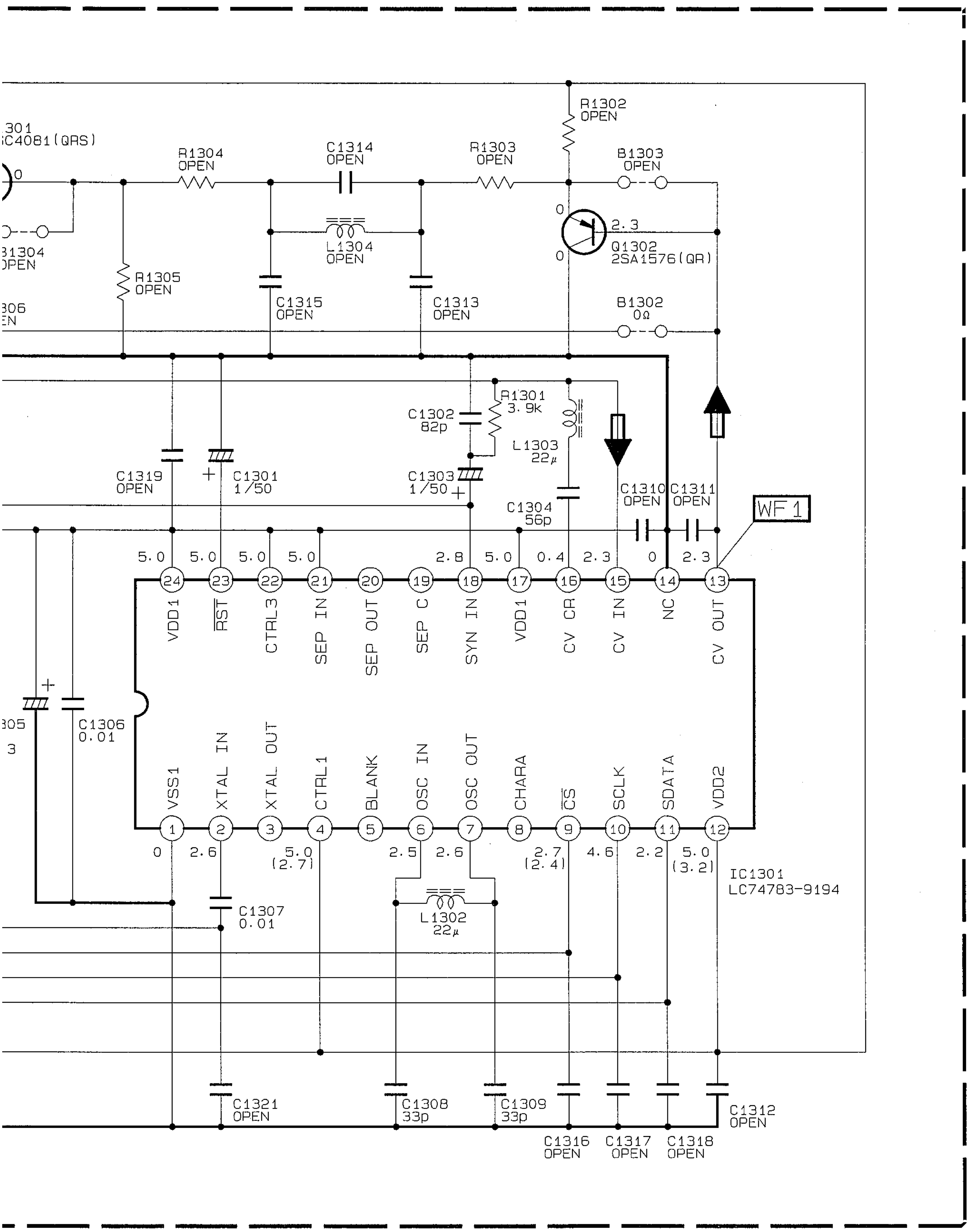

FROM/TO
VIDEO/N. AUDIO
(Page4-12)
CTL_HEAD(+)
CTL_HEAD(-)
GND(C)
TO FMA
(Page4-14)
A.FF
WF1
WF3
C1104
100P
1k
1k
C1102
OPEN
R1104
OPEN
C1103
0.056
C1101
0.001
R1102
1.2k
R1101
OPEN
R1103
10k
IC1101
BU2885BS
C1105
OPEN
Q1101
OPEN
C1114
10/16
C1115
100/6.3
C1113
10/16
C1106
0.1
C1112
OPEN
R1107
5.6k
R1109
5.6k
R1108
2.2k
R1110
OPEN
C1107
0.001
TP1101
CTL.P
C1116
1/50
C1111
0.1
C1110
0.0022
R1112
2.2k
R1113 10k
DUTY I/O
D.PG/FG
D.FF
A.FF
V.PULSE
VP DLY
CFG IN
CTL CLK
GND
COMP IN
CTL
RECCTL+
RECCTL-
FSC IN
CFG C/D
CTL CLK
CTL C/D
DRUM PFV
CAP PFV
VCC
CTL P
CTLAMP-
CTLAMP+
C.SYNC
6.5H DET
SERVO FF
FG COUNTER
PGMM
VFF
VP WIDTH
VP DELAY
CFG COUNT
R2R
TRIG
RECCTL
1/H
CTL COUNT
SEARCH DET
DRUM ROM CAL
ROMDATA
CAP REF
CAP TRAPE
DIGITAL FILTER + MIX
REF COUNTER
DRUM TRAPE
DRUMFV
TRAMM
CTL DELAY
PWMGEN
ROM CAPFV
FF
BIT PAT.
FSC
SAMPLE
REC
HIGH
AFF ON
VPON

NOTE : For SERVO waveforms, please refer to page4-25.

4.11 ON SCREEN SCHEMATIC DIAGRAM



5
4
3
2
1
A
B
C
D
0 3 MAIN[ON SCREEN]
FROM/TO
VIDEO/N.AUDIO
(Page4-11)
VIDEO[OSD]OUT
VIDEO_OUT
2fsc
C.SYNC
Q1301
2SC4081(
5.0
0
2.3
B1304
OPEN
R1306
OPEN
Q1303
OPEN
R1310
OPEN
C1305
47
/6.3
L1305
33μ
FROM/TO
SYSCON
(Page4-16)
OS_CE
OS_CLK
OS_DATA
C1322
OPEN
L1301
100μ
FROM/TO
SW.REG
(Page4-18)
SW5V
GND
WR1
R1307
10k
R1308
10k
R1309
10k
C1320
0.01

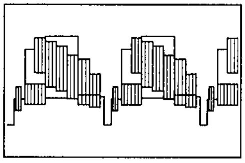

301
C4081(QRS)
0
31304
OPEN
306
N
R1304
OPEN
C1314
OPEN
R1303
OPEN
R1302
OPEN
B1303
OPEN
L1304
OPEN
R1305
OPEN
C1315
OPEN
C1313
OPEN
0
2.3
0
Q1302
2SA1576(QR)
B1302
0Ω
R1301
3.9k
C1302
82p
L1303
22μ
C1319
OPEN
C1301
1/50
C1303
1/50
C1304
56p
C1310
OPEN
C1311
OPEN
WF1
5.0
5.0
5.0
5.0
2.8
5.0
0.4
2.3
0
2.3
24 VDD1
23 RST
22 CTRL3
21 SEP IN
20 SEP OUT
19 SEP C
18 SYN IN
17 VDD1
16 CV CR
15 CV IN
14 NC
13 CV OUT
305
3
C1306
0.01
1 VSS1
2 XTAL IN
3 XTAL OUT
4 CTRL1
5 BLANK
6 OSC IN
7 OSC OUT
8 CHARA
9 CS
10 SCLK
11 SDATA
12 VDD2
0
2.6
5.0
(2.7)
2.5
2.6
2.7
(2.4)
4.6
2.2
5.0
(3.2)
IC1301
LC74783-9194
C1307
0.01
L1302
22μ
C1321
OPEN
C1308
33p
C1309
33p
C1316
OPEN
C1317
OPEN
C1318
OPEN
C1312
OPEN

NOTE : For ON SCREEN waveforms, please refer to page4-25.

WAVEFORMS

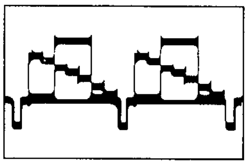
— VIDEO/N. AUDIO —

WF1 IC1-60, 61



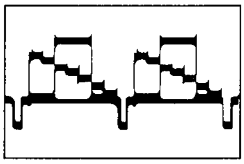
REC 0.8 Vp-p
50 mV/20 µsec/DIV

WF2 IC1-66



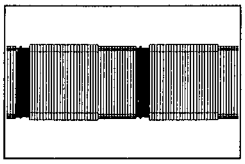
PB 0.56 Vp-p
20 mV/20 µsec/DIV

WF3 IC1-70



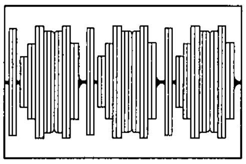
REC/PB 0.56 Vp-p
20 mV/20 µsec/DIV

WF4 IC1-6



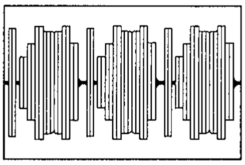
REC 0.4 Vp-p
20 mV/5 msec/DIV

WF5 IC1-13



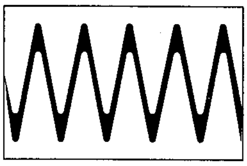
PB 0.61 Vp-p
20 mV/20 µsec/DIV

WF6 IC1-15



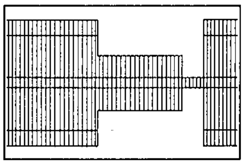
REC 0.47 Vp-p
20 mV/20 µsec/DIV

WF7 IC1-34



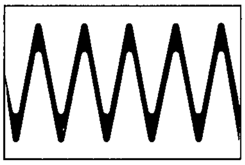
REC 2.1 Vp-p
50 mV/1 msec/DIV

WF8 IC1-38



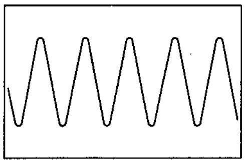
PB 0.01 Vp-p
0.5 mV/5 msec/DIV

WF9 IC1-43



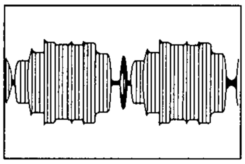
REC 0.29 Vp-p
10 mV/1 msec/DIV

WF10 IC1-46



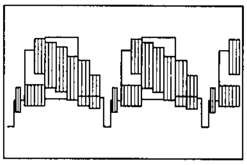
PB 1.1 Vp-p
20 mV/1 msec/DIV

WF11 IC1-55



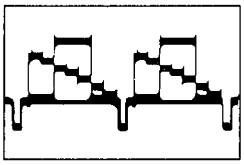
PB 0.55 Vp-p
20 mV/20 µsec/DIV

WF12 IC1-57



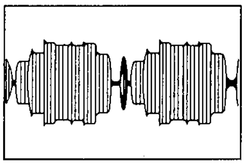
REC/PB 2.3 Vp-p
0.1 V/20 µsec/DIV

WF13 IC2-5



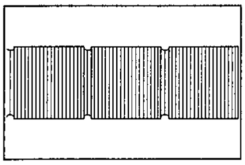
PB 0.49 Vp-p
20 mV/20 µsec/DIV

WF14 IC2-8



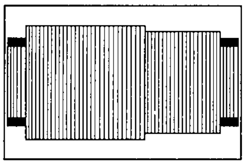
PB 0.43 Vp-p
20 mV/20 µsec/DIV

WF15 IC101-4



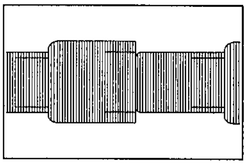
REC 3.7 Vp-p
0.1 V/5 msec/DIV

WF16 IC101-28



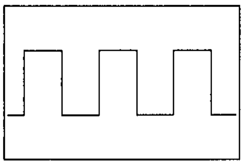
REC 0.05 Vp-p
5 mV/5 msec/DIV

WF17 TP106 PB FM/COLOR



PB 0.44 Vp-p
20 mV/5 msec/DIV

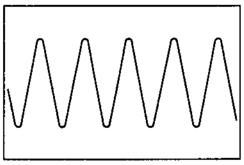
WF18 TP111 D. FF



REC/PB 5.6 Vp-p
0.2 V/10 msec/DIV

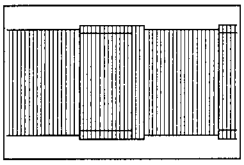
— FMA —

WF1 IC401-1



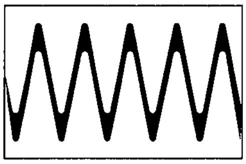
REC 0.29 Vp-p
10 mV/1 msec/DIV

WF2 IC401-13



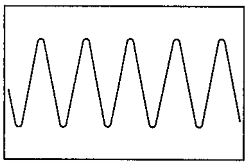
REC 0.71 Vp-p
20 mV/5 msec/DIV

WF3 IC401-41



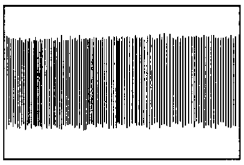
REC 0.29 Vp-p
10 mV/1 msec/DIV

WF4 IC401-45



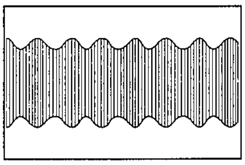
REC/PB 1.3 Vp-p
50 mV/1 msec/DIV

WF5 IC501-9



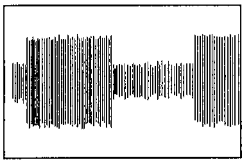
REC 0.4 Vp-p
20 mV/1 msec/DIV

WF6 IC501-16



REC 3.2 Vp-p
0.1 V/1 msec/DIV

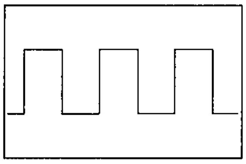
WF7 TP553 A. PB FM



PB 0.4 Vp-p
20 mV/5 msec/DIV

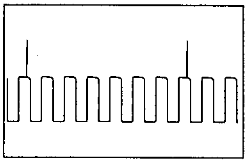
— SERVO —

WF1 IC1101-21 D. FF



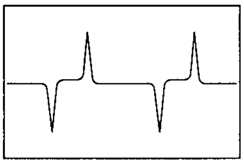
REC/PB 5.0 Vp-p
0.2 V/10 msec/DIV

WF2 IC1101-22 D. PG/FG



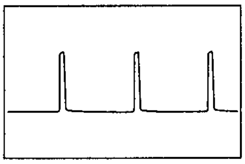
REC/PB 4.2 Vp-p
0.1 V/5 msec/DIV

WF3 TP1101 CTL PULSE



PB 2.9 Vp-p
0.1 V/5 msec/DIV

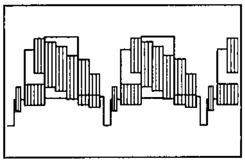
WF4 IC1101-2 C. SYNC



REC 5.1 Vp-p
0.1 V/20 µsec/DIV

— ON SCREEN —

WF1 IC1301, 13

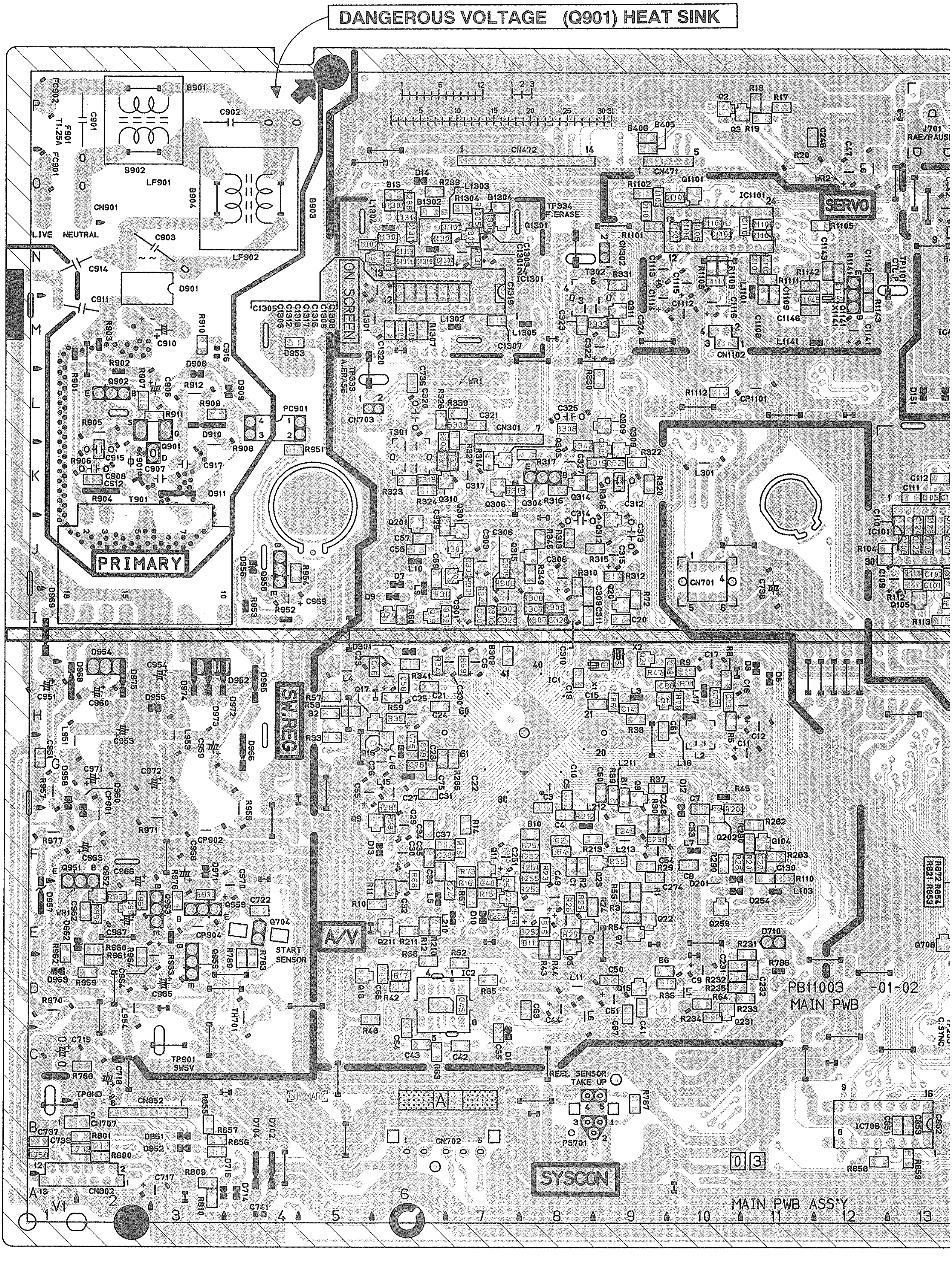


REC 2.3 Vp-p
50 mV/20 µsec/DIV

COMPONENT PARTS LOCATION GUIDE

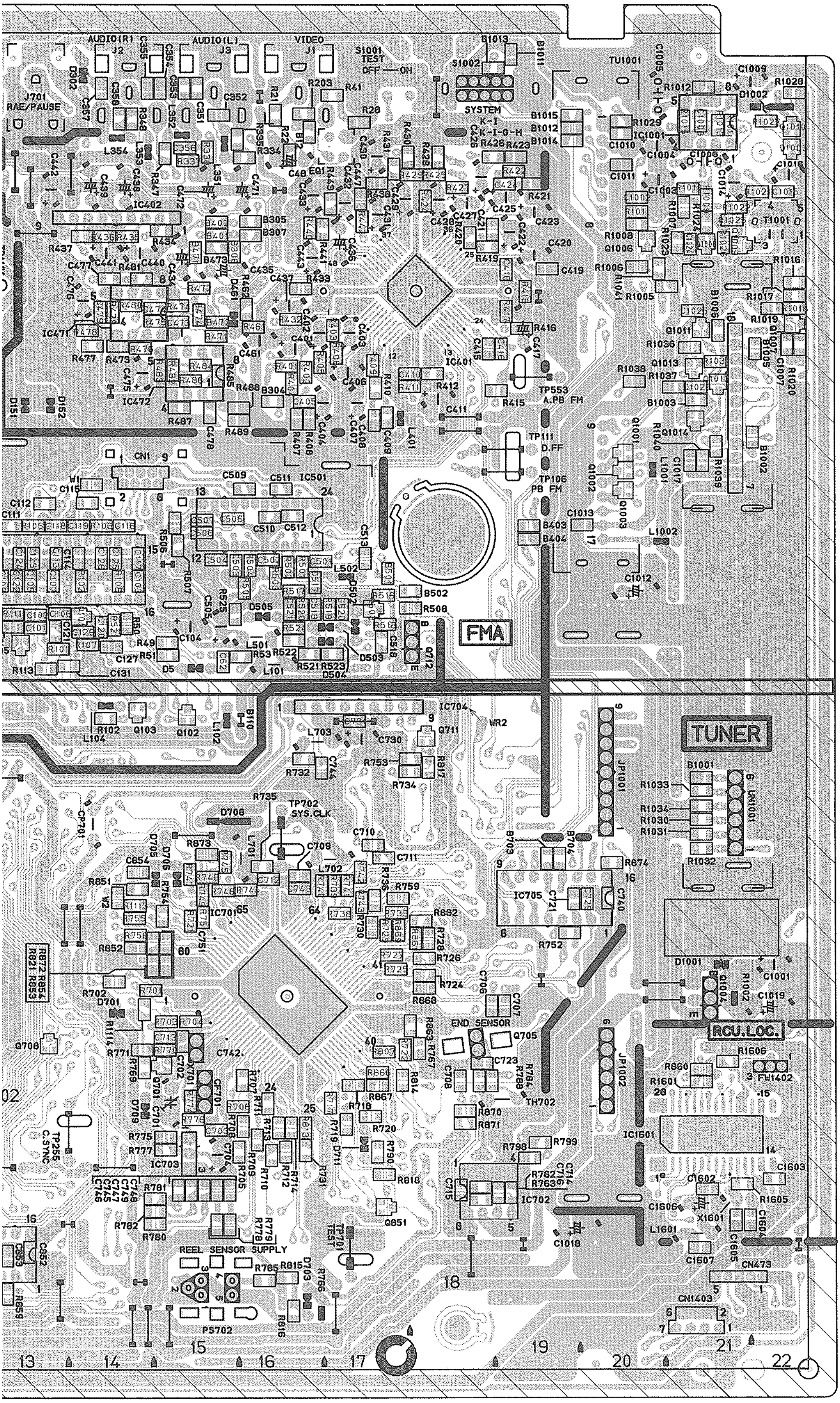
REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	8F
C2	B	C	8F
C3	B	C	8G
C4	B	C	8F
C5	B	C	8G
C6	A	D	7H
C7	B	C	10G
C8	B	C	10F
C9	A	D	10D
C10	A	D	8G
C11	A	D	11G
C12	A	D	11H
C13	B	C	10H
C14	B	C	9H
C15	B	C	9H
C16	A	D	11H
C17	A	D	10H
C18	B	C	10H
C19	B	C	8H
C20	B	C	9I
C21	B	C	6H
C22	A	D	7G
C23	A	D	6H
C24	B	C	6H
C25	A	D	6H
C26	A	D	6G
C27	A	D	6G
C28	B	C	6G
C29	A	D	6F
C30	A	D	6F
C31	B	C	6G
C32	A	D	6E
C33	B	C	6E
C34	B	C	6F
C35	B	C	6F
C36	B	C	6F
C37	B	C	6F
C38	B	C	6F
C40	B	C	7E
C41	B	C	9D
C42	B	C	7C
C43	B	C	6C
C44	A	D	8D
C45	B	C	7D
C46	B	C	6H
C47	A	D	12O
C48	A	D	16O
C49	A	D	8E
C50	B	C	9D
C51	A	D	9D
C52	A	D	8E
C53	B	C	10F
C54	A	D	9F
C55	A	D	5G
C56	B	C	6J
C57	B	C	6J
C58	B	C	6H
C59	B	C	6J
C60	B	C	9G
C61	B	C	9H
C62	B	C	15I
C63	B	C	8D
C64	B	C	6D
C65	B	C	7C
C66	B	C	6D
C67	B	C	9D
C75	B	C	6G
C76	B	C	6G
C77	B	C	10H
C78	B	C	6G
C79	B	C	6G
C80	B	C	9H
C101	B	C	13J
C102	B	C	13J
C103	B	C	14J
C104	A	D	15J
C105	B	C	13J
C106	B	C	13J
C107	B	C	13J
C108	B	C	13J
C109	A	D	13J
C110	B	C	13J
C111	B	C	13K
C112	B	C	13K
C113	B	C	13J
C114	B	C	14J
C115	B	C	14K
C116	B	C	14K
C117	B	C	14J
C118	B	C	13K
C119	B	C	14K
C120	B	C	14J
C121	B	C	13J
C122	B	C	13J
C123	B	C	13J
C124	B	C	13J
C125	B	C	14J
C126	B	C	14J
C127	B	C	14I
C129	B	C	14J
C130	B	C	11F
C131	B	C	14I
C231	B	C	10D
C232	B	C	11D
C246	B	C	11P
C247	B	C	7E
C248	B	C	9F
C249	B	C	9F
C250	B	C	9F
C251	A	D	7F
C252	A	D	8E
C271	B	C	11F
C274	B	C	9F
C301	A	D	7I
C302	B	C	7J
C303	A	D	7J
C304	B	C	7I
C305	B	C	7J
C306	A	D	7I
C307	B	C	8I
C308	A	D	8J
C309	B	C	8I
C310	A	D	8I
C311	B	C	8I
C312	A	D	9K
C313	A	D	9J
C314	A	D	8J
C315	A	D	9J
C317	A	D	7K
C318	B	C	6K
C319	B	C	6K
C320	A	D	6L
C321	B	C	7L
C322	A	D	9M
C323	B	C	8M
C324	B	C	9M
C325	A	D	8L
C326	B	C	8I
C327	A	D	8K
C328	B	C	7I
C329	B	C	6J
C330	A	D	7H
C351	B	C	15P
C352	B	C	15P
C353	B	C	15P
C354	B	C	15P
C355	B	C	14P
C356	B	C	15O
C357	B	C	14P
C358	B	C	14P
C401	A	D	16M
C402	A	D	16M
C403	A	D	17M
C404	A	D	16L
C405	B	C	16L
C406	A	D	17M
C407	A	D	17L
C408	B	C	17L
C409	B	C	17L
C410	B	C	18M
C411	A	D	18L
C415	B	C	18M
C416	B	C	19M
C417	A	D	19M
C418	B	C	19N
C419	B	C	19N
C420	A	D	19N
C421	B	C	18N
C422	A	D	19N
C423	A	D	19N
C424	B	C	19O
C425	A	D	19O
C426	A	D	18O
C427	A	D	18O
C428	A	D	18O
C429	A	D	17O
C430	A	D	17O
C431	A	D	17N
C432	A	D	17N
C433	A	D	16O
C434	A	D	15N
C435	A	D	15N
C436	A	D	17N
C437	A	D	16M
C438	A	D	14O
C439	A	D	14O
C440	A	D	14N
C441	A	D	14N
C442	A	D	13O
C443	A	D	16N
C447	B	C	17O
C461	A	D	16M
C471	A	D	16O
C472	A	D	15O
C473	B	C	15M
C474	B	C	15M
C475	A	D	14L
C476	A	D	14M
C477	B	C	14N
C478	B	C	15L
C479	B	C	14M
C501	B	C	16J
C502	B	C	16J
C503	B	C	15J
C504	B	C	15J
C505	A	D	15J
C506	B	C	15K
C507	B	C	15K
C508	B	C	15K
C509	B	C	16K
C510	B	C	16K
C511	B	C	16K
C512	B	C	16K
C513	B	C	17J
C517	B	C	16J
C518	B	C	17I
C519	B	C	16J
C520	B	C	17J
C521	B	C	16J
C701	A	D	15D
C702	B	C	15E
C703	B	C	15D
C704	A	D	15C
C706	B	C	18E
C707	B	C	19E
C708	B	C	18D
C709	B	C	16G
C710	B	C	17G
C711	B	C	17G
C712	B	C	16G
C713	B	C	15E
C714	B	C	19C
C715	B	C	18C
C716	B	C	19C
C717	A	D	2A
C718	A	D	2C
C719	A	D	1C
C721	B	C	19F
C722	B	C	4E
C723	B	C	18D
C729	B	C	20F
C730	A	D	17H
C731	B	C	17H
C732	B	C	2B
C733	B	C	2B
C736	B	C	6L
C737	B	C	1B
C738	A	D	11I
C740	B	C	20F
C741	A	D	4A
C742	A	D	15E
C743	B	C	16G
C744	B	C	16H
C745	B	C	15C
C746	B	C	15C
C747	B	C	15C
C748	B	C	15C
C749	B	C	15C
C750	B	C	1B
C751	A	D	15F
C851	B	C	13B
C852	B	C	13B
C853	B	C	13B
C854	B	C	14G
C901	A	D	2P
C902	A	D	3P
C903	A	D	2N
C906	A	D	3L
C907	A	D	3K
C908	A	D	2K
C910	A	D	2M
C911	A	D	2M
C912	B	C	2K
C914	A	D	2N
C915	A	D	2K
C916	A	D	3M
C917	A	D	3K
C951	A	D	1H
C953	A	D	2H
C954	A	D	3H
C959	A	D	3G
C960	A	D	2H
C961	B	C	1G
C962	B	C	2E
C963	A	D	1F
C964	A	D	3E
C965	A	D	3D
C966	A	D	2F
C967	A	D	2E
C968	A	D	3E
C969	A	D	4I
C970	A	D	4E
C971	A	D	2G
C972	A	D	3G
C1001	A	D	22F
C1002	B	C	20O
C1003	A	D	20O
C1004	A	D	20O
C1005	A	D	20P
C1006	A	D	21O
C1007	B	C	22M
C1008	B	C	21P
C1009	A	D	21P
C1010	B	C	20O
C1011	B	C	20O
C1012	A	D	20J
C1013	B	C	20K
C1014	A	D	21O
C1015	B	C	22O
C1016	A	D	22O
C1017	B	C	21L
C1018	A	D	19C
C1019	A	D	22E
C1024	B	C	21N
C1025	B	C	21M
C1026	B	C	21L
C1101	B	C	9O
C1102	B	C	10N
C1103	B	C	10O
C1104	B	C	11N
C1105	B	C	10O
C1106	B	C	10N
C1107	B	C	11N
C1108	B	C	11N
C1109	B	C	11N
C1110	B	C	10N
C1111	B	C	10N
C1112	A	D	10M
C1113	A	D	9N
C1114	A	D	9M
C1115	A	D	10N
C1116	A	D	10M
C1141	A	D	12M
C1142	B	C	12N
C1143	B	C	12N
C1144	B	C	12N
C1145	B	C	11M
C1146	B	C	11M
C1301	A	D	7N
C1302	B	C	7N
C1303	A	D	7N
C1304	B	C	6N
C1305	A	D	5N
C1306	B	C	6N
C1307	B	C	7M
C1308	B	C	7N
C1309	B	C	7N
C1310	B	C	6N
C1311	B	C	6N
C1312	B	C	6N
C1313	B	C	6N
C1314	B	C	6O
C1315	B	C	6N
C1316	B	C	6N
C1317	B	C	6N
C1318	B	C	6N
C1319	B	C	7N
C1320	B	C	6M
C1602	B	C	21C
C1603	B	C	22C
C1604	B	C	21C
C1605	B	C	21C
C1606	A	D	21C
C1607	B	C	21B
CONNECTOR			
CN1	A	D	14K
CN301	A	D	7L
CN302	A	D	9N
CN471	A	D	9O
CN472	A	D	7O
CN473	A	D	22B
CN701	A	D	10J
CN702	A	D	6B
CN703	A	D	5L
CN707	A	D	1B
CN802	A	D	2A
CN852	A	D	3B
CN901	A	D	1O
CN1102	A	D	10M
CN1403	A	D	21
CIRCUIT PROTECTOR			
CP701	A	D	14G
CP901	A	D	2F
CP902	A	D	3F
CP904	A	D	3E
CP1101	A	D	11L
DIODE			
D5	A	D	15I
D6	A	D	11H
D7	A	D	6J
D8	A	D	11I
D9	A	D	6I
D10	A	D	7E
D11	A	D	7D
D12	A	D	10G
D13	A	D	6F
D14	A	D	6O
D151	A	D	13L
D152	A	D	13L
D201	A	D	11F
D254	A	D	11E
D301	A	D	6I
D302	A	D	14P
D461	A	D	15M
D502	A	D	17J
D503	A	D	17J
D504	A	D	17I
D505	A	D	16J
D701	A	D	14E
D702	A	D	4B
D703	A	D	16B
D704	A	D	4B
D705	A	D	15G
D706	A	D	15G
D708	A	D	16G
D709	A	D	14D
D710	A	D	11E
D711	A	D	17D
D714	A	D	4A
D715	A	D	3A
D851	A	D	3B
D852	A	D	3B
D901	B	C	2N
D908	A	D	3L
D909	A	D	4L
D910	A	D	4L
D911	A	D	3K
D952	A	D	3H
D954	A	D	2H
D955	A	D	2H
D956	A	D	4J
D957	A	D	1E
D958	A	D	1F
D960	A	D	2F
D962	A	D	2E
D963	A	D	1D
D965	A	D	4I
D966	A	D	4H
D968	A	D	1H
D969	A	D	1I
D971	A	D	3F
D972	A	D	3I
D973	A	D	3I
D974	A	D	3I
D975	A	D	2I
D1001	A	D	21F
D1002	A	D	22P
D1003	B	C	22O
IC			
IC1	B	C	8H
IC2	B	C	6D
IC101	A	D	13K
IC401	B	C	18N
IC402	A	D	15N
IC471	A	D	15M
IC472	A	D	15L
IC501	A	D	16K
IC701	B	C	16E
IC702	A	D	18C
IC703	A	D	15D
IC704	A	D	16I
IC705	A	D	20F
IC706	A	D	13B
IC1001	A	D	21O
IC1101	A	D	11N
IC1301	A	D	7M
IC1601	B	C	21D
COIL			
L1	A	D	10D
L2	A	D	10G
L3	A	D	9H
L4	A	D	5H
L5	A	D	6E
L6	A	D	8D
L7	A	D	10F
L8	A	D	12O
L9	A	D	6I
L10	A	D	6J
L11	A	D	8D
L15	A	D	6G
L16	A	D	6G
L17	A	D	10H
L18	A	D	10H
L101	A	D	16I
L102	A	D	15I
L103	A	D	11E
L104	A	D	14I
L210	A	D	7E
L211	A	D	9F
L212	A	D	8F
L213	A	D	9F
L301	A	D	10K
L351	A	D	15O
L352	A	D	15O
L353	A	D	14O
L354	A	D	14O
L401	A	D	17L
L501	A	D	16I
L502	A	D	17J
L701	A	D	16G
L702	A	D	16G
L703	A	D	16H
L951	A	D	1G
L953	A	D	3G
L954	A	D	2D
L1001	A	D	20K
L1002	A	D	20K
L1101	A	D	11N
L1141	A	D	12M
L1301	A	D	6M
L1302	A	D	7M
L1303	A	D	6N
L1304	A	D	6N
L1305	A	D	8M
L1601	A	D	21B
TRANSISTOR			
Q1	B	C	9H
Q2	B	C	10P
Q3	B	C	11P
Q4	B	C	8E
Q5	B	C	8E
Q7	B	C	9E
Q8	B	C	9G
Q9	B	C	6F
Q11	B	C	7F
Q15	B	C	9D
Q16	B	C	6G
Q17	B	C	6H
Q18	B	C	5D
Q19	B	C	6I
Q20	B	C	9I
Q21	B	C	9I
Q22	B	C	9E
Q23	B	C	9F
Q24	B	C	6I
Q101	B	C	14J
Q102	B	C	15I
Q103	B	C	14I
Q104	B	C	11F
Q105	B	C	13I
Q201	B	C	6J
Q202	B	C	10F
Q211	B	C	6E
Q231	B	C	10D
Q251	B	C	7E
Q252	B	C	7E
Q259	B	C	10E
Q301	B	C	7J
Q302	B	C	7J
Q303	B	C	7J
Q304	A	D	8K
Q305	B	C	7K
Q306	B	C	7K
Q307	B	C	9K
Q308	B	C	9K
Q309	B	C	9L
Q310	B	C	6K
Q311	B	C	9M
Q312	B	C	9J
Q314	B	C	8K
Q315	B	C	8J
Q503	B	C	17J
Q701	B	C	15D
Q704	A	D	4E
Q705	A	D	18E
Q708	B	C	13E
Q711	B	C	18H
Q712	A	D	18I
Q851	B	C	17C
Q901	A	D	2L
Q902	A	D	2L
Q951	A	D	1F
Q952	B	C	2E
Q953	A	D	3E
Q954	B	C	2E
Q955	A	D	3D
Q958	A	D	4J
Q959	A	D	3E
Q1001	B	C	20L
Q1002	B	C	20K
Q1003	B	C	20K
Q1004	A	D	21E
Q1006	B	C	20N
Q1007	B	C	22M
Q1008	B	C	21N
Q1009	B	C	21N
Q1010	B	C	22O
Q1011	B	C	21M
Q1012	B	C	21L
Q1013	B	C	21M
Q1014	B	C	21L
Q1101	B	C	10O
Q1141	A	D	12N
Q1301	B	C	7O
Q1302	B	C	6N
Q1303	B	C	7N
RESISTOR			
R1	B	C	9E
R2	B	C	8F
R3	B	C	9E
R4	B	C	8F
R5	B	C	10H
R6	B	C	9H
R8	B	C	10H
R9	B	C	10H
R10	B	C	6E
R11	B	C	6E
R12	B	C	6E
R13	B	C	7F
R14	B	C	7F
R15	B	C	7E
R16	B	C	7E
R17	B	C	11P
R18	B	C	11P
R19	B	C	11P
R20	A	D	11O
R21	B	C	16P
R22	B	C	16O
R23	B	C	8F
R24	B	C	8E
R25	B	C	8E
R26	B	C	8E
R27	B	C	8E
R28	B	C	17P
R29	B	C	9F
R30	B	C	9F
R31	B	C	6I
R32	B	C	7I
R33	B	C	5G
R35	B	C	6H
R36	B	C	9D
R37	B	C	9G
R38	B	C	9H
R39	B	C	9G
R41	B	C	17P
R42	B	C	6D
R43	B	C	8E
R44	B	C	8E
R45	A	D	10G
R46	B	C	9I
R47	B	C	9H
R48	B	C	5D
R49	B	C	15I
R50	B	C	14J
R51	B	C	15I
R52	B	C	14J
R53	B	C	16I
R54	B	C	9E
R55	B	C	9F
R56	B	C	9E
R57	B	C	5H
R58	B	C	5H
R59	B	C	6H
R60	B	C	6I
R61	B	C	9H
R62	B	C	7D
R63	B	C	6C
R64	B	C	10D
R65	B	C	7D
R66	B	C	6D
R67	B	C	7E
R68	B	C	6F
R69	B	C	7H
R70	B	C	10H
R71	B	C	10H
R72	B	C	9I
R73	B	C	7F
R101	B	C	13I
R102	B	C	14I
R103	B	C	14J
R104	B	C	13J
R105	B	C	13K
R106	B	C	14K
R107	B	C	14I
R108	B	C	14J
R110	B	C	11F
R111	B	C	13J
R112	B	C	13J
R113	B	C	13I
R201	B	C	11F
R202	B	C	10G
R203	B	C	16P
R210	B	C	6E
R211	B	C	6E
R212	B	C	8F
R213	B	C	8F
R231	B	C	11E
R232	B	C	10D
R233	B	C	11D
R234	B	C	10D
R235	B	C	10D
R251	B	C	8F
R252	B	C	8F
R253	B	C	8E
R254	B	C	7E
R255	B	C	8F
R280	B	C	11F
R281	B	C	10F
R282	B	C	11F
R283	B	C	11F
R285	B	C	6G
R286	B	C	7G
R287	B	C	6F
R288	B	C	6O
R289	B	C	6O
R290	B	C	10F
R301	B	C	7J
R302	B	C	7I
R303	B	C	7I
R306	B	C	7J
R307	B	C	8I
R308	B	C	8I
R309	B	C	8I
R310	B	C	8J
R311	B	C	9K
R312	B	C	9J
R313	B	C	8J
R314	B	C	7K
R315	B	C	9J
R316	B	C	8K
R317	B	C	8K
R318	B	C	7K
R319	B	C	9K
R320	B	C	9K
R321	B	C	9K
R322	B	C	9K
R323	B	C	6K
R324	B	C	6K
R325	B	C	7K
R326	B	C	6L
R327	B	C	7L
R330	B	C	9L
R331	B	C	9N
R332	B	C	9M
R334	B	C	16O
R335	B	C	15O
R337	B	C	15O
R338	B	C	15O
R339	B	C	7L
R340	B	C	6H
R341	B	C	6H
R342	B	C	8K
R344	B	C	7I
R345	B	C	8J
R346	B	C	8K
R347	B	C	15O
R348	B	C	14P
R349	B	C	8J
R401	B	C	16M
R402	B	C	16M
R403	B	C	17M
R404	B	C	16L
R405	B	C	16M
R406	B	C	17M
R407	B	C	16L
R408	B	C	16L
R409	B	C	17M
R410	B	C	17L
R411	B	C	18L
R412	B	C	18M
R415	B	C	19L
R416	B	C	19M
R417	B	C	19M
R418	B	C	19N
R419	B	C	18N
R420	B	C	18N
R421	B	C	19O
R422	B	C	19O
R423	B	C	19O
R424	B	C	18O
R425	B	C	18O
R426	B	C	18O
R427	B	C	18O
R428	B	C	18O
R429	B	C	18O
R430	B	C	17O
R431	B	C	17O
R432	B	C	16M
R433	B	C	16N
R434	B	C	15N
R435	B	C	14N
R436	B	C	14N
R437	B	C	14N
R438	B	C	17O
R440	B	C	16N
R441	B	C	16N
R442	B	C	17N
R443	B	C	17O
R461	B	C	16M
R462	B	C	16M
R471	B	C	15M
R472	B	C	15N
R473	B	C	14M
R474	B	C	15M
R475	B	C	15M
R476	B	C	14M
R477	B	C	14M
R478	B	C	14M
R479	B	C	14M
R480	B	C	14M
R481	B	C	14N
R482	B	C	15M
R483	B	C	15M
R484	B	C	15M
R485	B	C	15M
R486	B	C	15L
R487	B	C	15L
R488	B	C	16L
R489	B	C	16L
R501	B	C	16J
R502	B	C	16J
R503	B	C	16J
R504	B	C	16J
R505	B	C	16J
R506	B	C	15K
R507	B	C	15K
R508	B	C	18J
R516	B	C	17J
R517	B	C	16J
R518	B	C	17J
R519	B	C	17J
R520	B	C	16J
R521	B	C	16I
R522	B	C	16I
R523	B	C	17I
R524	B	C	16J
R525	B	C	15J
R701	B	C	14E
R702	B	C	14E
R703	B	C	15E
R704	B	C	15E
R705	B	C	16C
R706	B	C	15D
R707	B	C	16D
R708	B	C	16D
R709	B	C	16D
R710	B	C	16C
R711	B	C	16D
R712	B	C	16C
R713	B	C	16D
R714	B	C	16D
R717	B	C	17D
R718	B	C	17D
R719	B	C	17D
R720	B	C	17D
R721	B	C	15F
R722	B	C	17E
R724	B	C	18E
R725	B	C	17F
R726	B	C	18F
R727	B	C	17F
R728	B	C	18F
R729	B	C	17F
R730	B	C	17F
R731	B	C	16C
R732	B	C	16H
R733	B	C	17F
R734	B	C	18H
R735	B	C	16G
R736	B	C	17F
R738	B	C	17F
R739	B	C	17G
R740	B	C	16G
R741	B	C	17G
R742	B	C	17G
R743	B	C	17F
R744	B	C	16F
R745	B	C	15G
R746	B	C	15G
R747	B	C	15G
R748	B	C	15F
R749	B	C	15F
R751	B	C	15F
R752	B	C	19F
R753	B	C	18H
R754	B	C	15F
R755	B	C	14F
R756	B	C	14F
R759	B	C	17F
R762	B	C	18C
R763	B	C	18C
R766	A	D	16A
R767	B	C	18E
R768	B	C	2C
R769	B	C	14D
R770	B	C	15E
R771	B	C	14E
R774	B	C	15D
R775	B	C	15D
R776	B	C	15D
R777	B	C	15C
R778	B	C	15C
R779	B	C	15C
R780	B	C	15C
R781	B	C	15C
R782	B	C	15C
R783	B	C	4D
R784	B	C	18D
R785	B	C	16B
R786	A	D	11D
R787	B	C	9B
R788	B	C	18D
R789	B	C	4D
R790	B	C	17C
R798	B	C	19C
R799	B	C	19D
R800	B	C	2B
R801	B	C	2B
R807	B	C	17E
R809	B	C	3A
R810	B	C	3A
R813	B	C	16D
R814	B	C	17D
R815	B	C	16B
R816	B	C	16B
R817	B	C	18H
R818	B	C	17C
R821	B	C	14F
R851	B	C	14F
R852	B	C	14F
R853	B	C	14F
R854	B	C	15F
R855	B	C	3B
R856	B	C	3B
R857	B	C	3B
R858	B	C	12B
R859	B	C	13B
R860	B	C	21D
R861	B	C	18F
R862	B	C	18F
R863	B	C	18E
R866	B	C	17D
R867	B	C	17D
R868	B	C	18E
R869	B	C	17F
R870	B	C	18D
R871	B	C	18D
R872	B	C	15F
R873	B	C	15G
R874	B	C	20G
R901	A	D	1M
R902	A	D	2L
R903	A	D	2M
R904	A	D	2K
R905	A	D	2L
R906	B	C	2K
R907	B	C	2L
R908	A	D	3K
R909	B	C	3L
R910	B	C	3M
R911	B	C	3L
R912	A	D	3L
R951	B	C	4K
R952	A	D	4I
R953	A	D	4I
R954	B	C	4J
R955	A	D	4F
R957	A	D	1G
R958	B	C	2E
R959	B	C	2D
R960	B	C	2E
R961	B	C	2D
R962	B	C	1E
R963	A	D	3E
R964	B	C	2D
R965	B	C	2E
R966	B	C	2E
R970	A	D	1D
R971	A	D	2F
R972	B	C	3E
R976	B	C	3E
R977	A	D	1F
R1002	A	D	21E
R1005	B	C	21N
R1006	B	C	20N
R1007	B	C	21O
R1008	B	C	20N
R1009	B	C	21O
R1010	B	C	21O
R1011	B	C	20N
R1012	B	C	21P
R1013	B	C	21O
R1014	B	C	21O
R1015	B	C	21P
R1016	B	C	22N
R1017	B	C	22M
R1018	B	C	22M
R1019	B	C	22M
R1020	B	C	22M
R1021	B	C	22O
R1022	B	C	21O
R1023	B	C	21N
R1024	B	C	21N
R1025	B	C	21N
R1026	B	C	21N
R1027	B	C	22P
R1028	B	C	22P
R1029	B	C	20P
R1030	B	C	21G
R1031	B	C	21G
R1032	B	C	21G
R1033	B	C	21H
R1034	B	C	21G
R1035	B	C	21M
R1036	B	C	21M
R1037	B	C	21L
R1038	B	C	20L
R1039	B	C	21L
R1040	B	C	21L
R1041	B	C	20N
R1101	B	C	9N
R1102	B	C	9O
R1103	B	C	9O
R1104	B	C	11N
R1105	B	C	12N
R1106	B	C	11O
R1107	B	C	10N
R1108	B	C	10N
R1109	B	C	10N
R1110	B	C	11N
R1111	B	C	11N
R1112	B	C	10L
R1113	B	C	14F
R1114	B	C	14E
R1141	B	C	12N
R1142	B	C	11N
R1143	B	C	12M
R1301	B	C	6N
R1302	B	C	5N
R1303	B	C	6N
R1304	B	C	7O
R1305	B	C	7O
R1306	B	C	7O
R1307	B	C	6M
R1308	B	C	6M
R1309	B	C	6M
R1310	B	C	7N
R1601	B	C	21D
R1605	B	C	21C
R1606	B	C	21D
TEST POINT			
TP106	A	D	19K
TP111	A	D	19L
TP255	A	D	14D
TP333	A	D	5L
TP334	A	D	8N
TP553	A	D	19M
TP701	A	D	17B
TP702	A	D	16G
TP901	A	D	2C
TP1101	A	D	13M
TPGND	A	D	1B
OTHERS			
CF701	A	D	15D
EQ1	A	D	17O
F901	A	D	1O
FW1402	A	D	22D
J1	A	D	16P
J2	A	D	14P
J3	A	D	15P
J701	A	D	13P
JP1001	A	D	20G
JP1002	A	D	20D
K901	A	D	2K
LF901	A	D	2P
LF902	A	D	4O
PC901	A	D	5L
PS701	A	D	9B
PS702	A	D	15B
S1001	A	D	17P
S1002	A	D	18P
T301	A	D	6K
T302	A	D	9M
T901	A	D	1K
T1001	A	D	22N
TH701	A	D	4D
TH702	A	D	19D
TU1001	A	D	20O
UN1001	A	D	21G
X1	A	D	8I
X2	A	D	9I
X701	A	D	15E
X1141	A	D	12M
X1601	A	D	21C

4.12 MAIN AND A/C HEAD CIRCUIT BOARDS

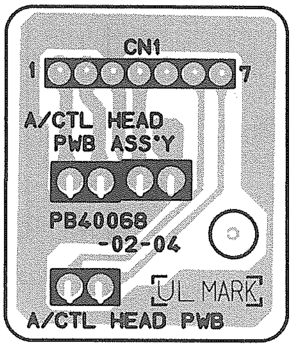


DANGEROUS VOLTAGE (Q901) HEAT SINK

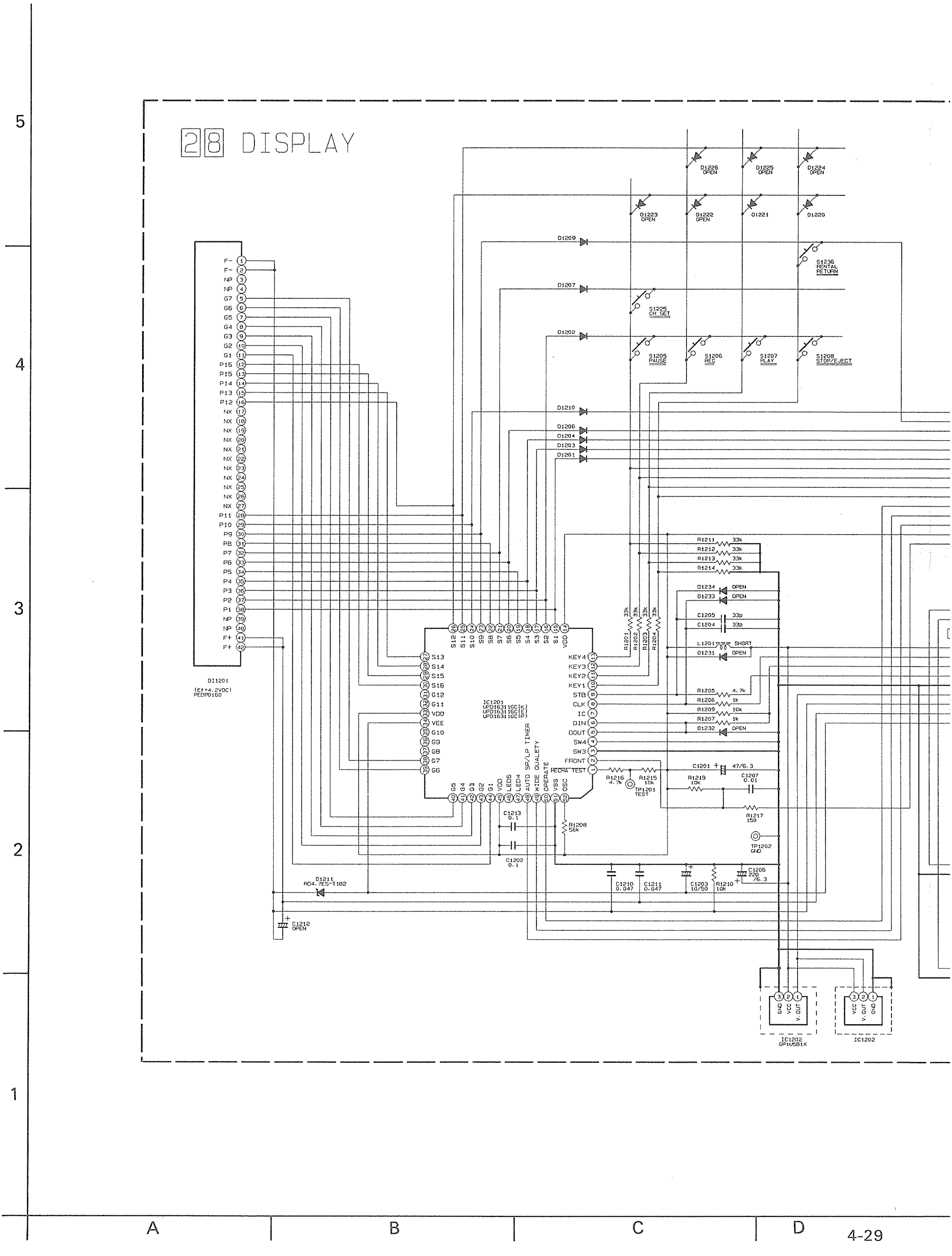
PRIMARY
ON SCREEN
SW.REG
A/V
SERVO
SYSCON
LIVE
NEUTRAL
CN901
CN472
CN471
CN301
CN701
CN702
CN703
CN707
CN852
CN902
CN1102
IC1
IC2
IC101
IC1101
IC1301
IC706
Q901
T901
D901
LF901
LF902
B901
B902
B903
B904
PC901
TP334 F.ERASE
TP333 A.ERASE
TP901 5V5V
TPGND
START SENSOR
REEL SENSOR TAKE UP
PS701
J701 RAE/PAUSE
PB11003 -01-02
MAIN PWB
MAIN PWB ASS'Y
P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13

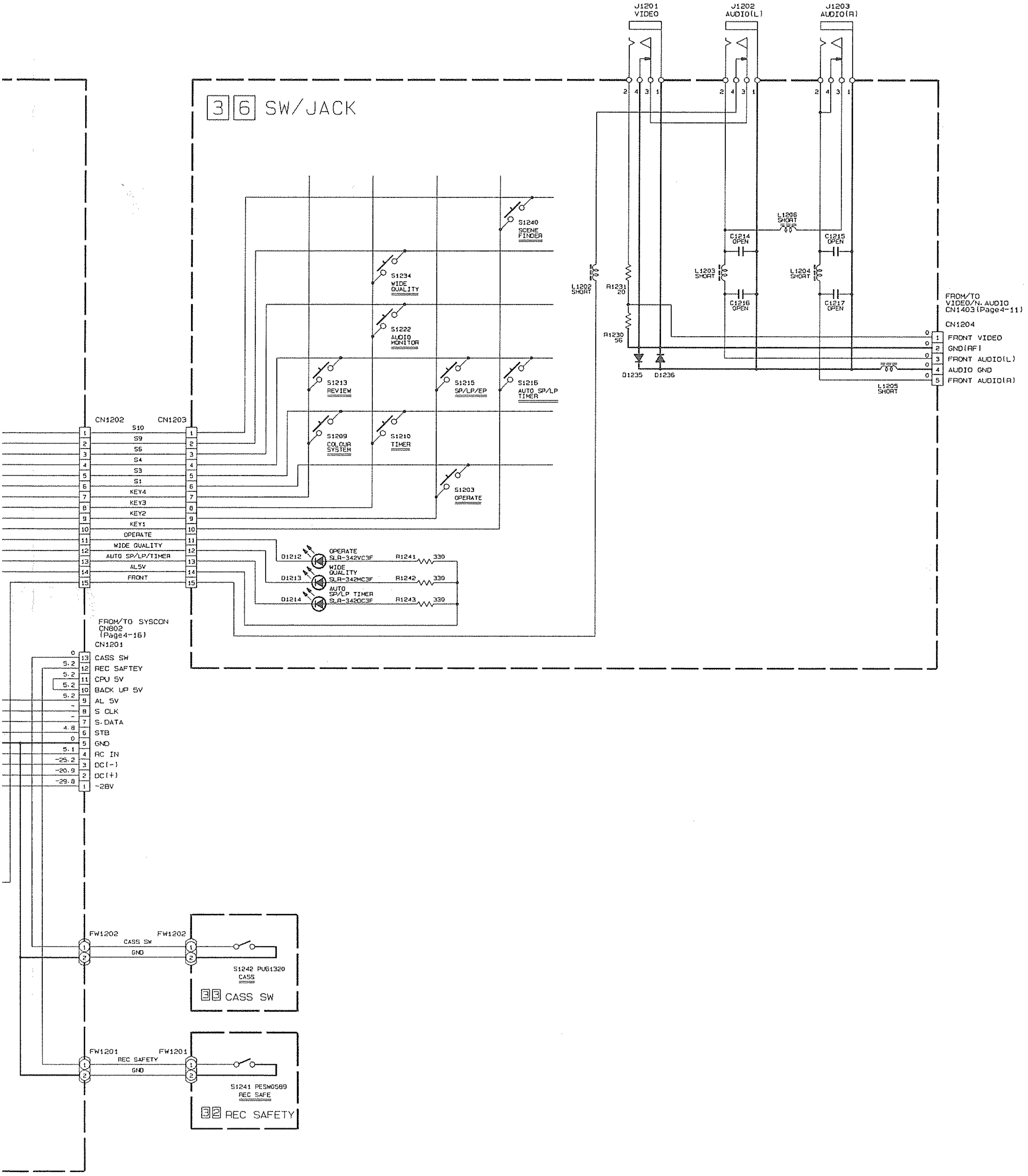

AUDIO(R)
J2
AUDIO(L)
J3
VIDEO
J1
S1001
TEST
OFF — ON
S1002
SYSTEM
K-I
K-I-G-H
TU1001
J701
RAE/PAUSE
IC402
IC471
IC472
IC401
IC501
CN1
TP553
A.PB FM
TP111
D.FF
TP106
PB FM
FMA
T1001
Q1001
Q1002
Q1003
IC704
WR2
Q711
Q712
JP1001
UN1001
TUNER
TP702
SYS.CLK
IC701
IC705
C740
IC703
IC702
END SENSOR
Q705
TH702
JP1002
RCU.LOC.
FW1402
IC1601
X1601
CN473
CN1403
TP255
C.SYNC
TP701
TEST
REEL SENSOR SUPPLY
PS702
Q851
Q708
13
14
15
16
17
18
19
20
21
22

— A/C HEAD —


CN1
1
7
A/CTL HEAD
PWB ASS'Y
PB40068
-02-04
UL MARK
A/CTL HEAD PWB

4.13 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW SCHEMATIC DIAGRAMS

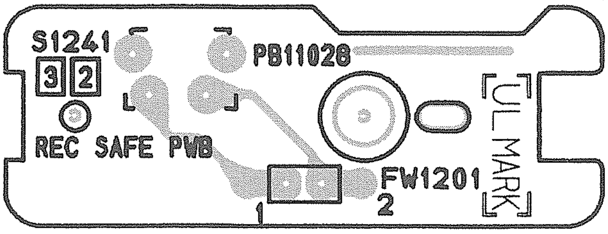

28 DISPLAY
5
4
3
2
1
A
B
C
D
F- 1
F- 2
NP 3
NP 4
G7 5
G6 6
G5 7
G4 8
G3 9
G2 10
G1 11
P16 12
P15 13
P14 14
P13 15
P12 16
NX 17
NX 18
NX 19
NX 20
NX 21
NX 22
NX 23
NX 24
NX 25
NX 26
NX 27
P11 28
P10 29
P9 30
P8 31
P7 32
P6 33
P5 34
P4 35
P3 36
P2 37
P1 38
NP 39
NP 40
F+ 41
F+ 42
DI1201
(Ef=4.2VDC)
PEDP0160
D1226 OPEN
D1225 OPEN
D1224 OPEN
D1223 OPEN
D1222 OPEN
D1221
D1220
D1209
S1236 RENTAL RETURN
D1207
S1225 CH SET
D1202
S1205 PAUSE
S1206 REC
S1207 PLAY
S1208 STOP/EJECT
D1210
D1206
D1204
D1203
D1201
R1211 33k
R1212 33k
R1213 33k
R1214 33k
D1234 OPEN
D1233 OPEN
R1201 33k
R1202 33k
R1203 33k
R1204 33k
C1205 33p
C1204 33p
L1201 SHORT
D1231 OPEN
R1205 4.7k
R1206 1k
R1209 10k
R1207 1k
D1232 OPEN
IC1201
UPD16311GC(K)
UPD16311GC(E)
UPD16311GC(P)
S12 26
S11 25
S10 24
S9 23
S8 22
S7 21
S6 20
S5 19
S4 18
S3 17
S2 16
S1 15
VDD 14
S13 27
S14 28
S15 29
S16 30
G12 31
G11 32
VDD 33
VEE 34
G10 35
G9 36
G8 37
G7 38
G6 39
KEY4 13
KEY3 12
KEY2 11
KEY1 10
STB 9
CLK 8
IC 7
DIN 6
DOUT 5
SW4 4
SW3 3
FRONT 2
MECHA TEST 1
G5 40
G4 41
G3 42
G2 43
G1 44
VDD 45
LED5 46
LED4 47
AUTO SP/LP TIMER 48
WIDE QUALETY 49
OPERATE 50
VSS 51
OSC 52
R1216 4.7k
TP1201 TEST
R1215 10k
C1201 47/6.3
R1219 10k
C1207 0.01
R1217 150
TP1202 GND
C1213 0.1
R1208 56k
C1202 0.1
C1210 0.047
C1211 0.047
C1203 10/50
R1210 10k
C1206 220 /6.3
D1211
RD4.7ES-T1B2
C1212 OPEN
3 GND
2 VCC
1 V.OUT
IC1202
GP1U5B1X
3 VCC
2 V.OUT
1 GND
IC1202



36 SW/JACK
J1201 VIDEO
J1202 AUDIO(L)
J1203 AUDIO(R)
S1240 SCENE FINDER
S1234 WIDE QUALITY
S1222 AUDIO MONITOR
S1213 REVIEW
S1215 SP/LP/EP
S1216 AUTO SP/LP TIMER
S1209 COLOUR SYSTEM
S1210 TIMER
S1203 OPERATE
L1206 SHORT
C1214 OPEN
C1215 OPEN
L1203 SHORT
L1204 SHORT
C1216 OPEN
C1217 OPEN
L1202 SHORT
R1231 20
R1230 56
D1235
D1236
L1205 SHORT
FROM/TO VIDEO/N.AUDIO CN1403(Page4-11)
CN1204
1 FRONT VIDEO
2 GND(RF)
3 FRONT AUDIO(L)
4 AUDIO GND
5 FRONT AUDIO(R)
CN1202
CN1203
1 S10
2 S9
3 S6
4 S4
5 S3
6 S1
7 KEY4
8 KEY3
9 KEY2
10 KEY1
11 OPERATE
12 WIDE QUALITY
13 AUTO SP/LP/TIMER
14 AL5V
15 FRONT
D1212 OPERATE SLR-342VC3F
D1213 WIDE QUALITY SLR-342MC3F
D1214 AUTO SP/LP TIMER SLR-342DC3F
R1241 330
R1242 330
R1243 330
FROM/TO SYSCON CN802 (Page4-16)
CN1201
13 CASS SW
12 REC SAFTEY
11 CPU 5V
10 BACK UP 5V
9 AL 5V
8 S CLK
7 S.DATA
6 STB
5 GND
4 RC IN
3 DC(-)
2 DC(+)
1 -28V
0
5.2
5.2
5.2
5.2
4.8
0
5.1
-29.2
-20.9
-29.8
FW1202
CASS SW
GND
S1242 PUG1320 CASS
33 CASS SW
FW1201
REC SAFETY
GND
S1241 PESW0589 REC SAFE
32 REC SAFETY

4.14 DISPLAY, SW/JACK, REC SAFETY AND CASSETTE SW CIRCUIT BOARDS

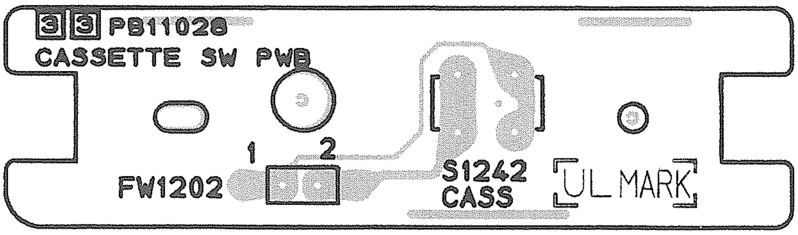
-REC SAFETY-


S1241
3 2
PB11028
REC SAFE PWB
FW1201
1
2
UL MARK

COMPONENT PARTS L

REF.No.	LOCATION		
CAPACITOR			
C1214	A	D	3A
C1215	A	D	3A
C1216	A	D	3A
C1217	A	D	3B
CONNECTOR			
CN1203	A	D	1A
CN1204	A	D	3C
DIODE			
D1212	A	D	4B
D1213	A	D	2B
D1214	A	D	1B
D1235	A	D	3B
D1236	A	D	3B
COIL			
L1202	A	D	3A
L1203	A	D	3A
L1204	A	D	3A
L1205	A	D	3B
L1206	A	D	3A
RESISTOR			
R1230	A	D	4B
R1231	A	D	4B
R1241	A	D	4C
R1242	A	D	2B
R1243	A	D	2B

-CASSETTE SW-


3 3 PB11028
CASSETTE SW PWB
1
2
FW1202
S1242
CASS
UL MARK

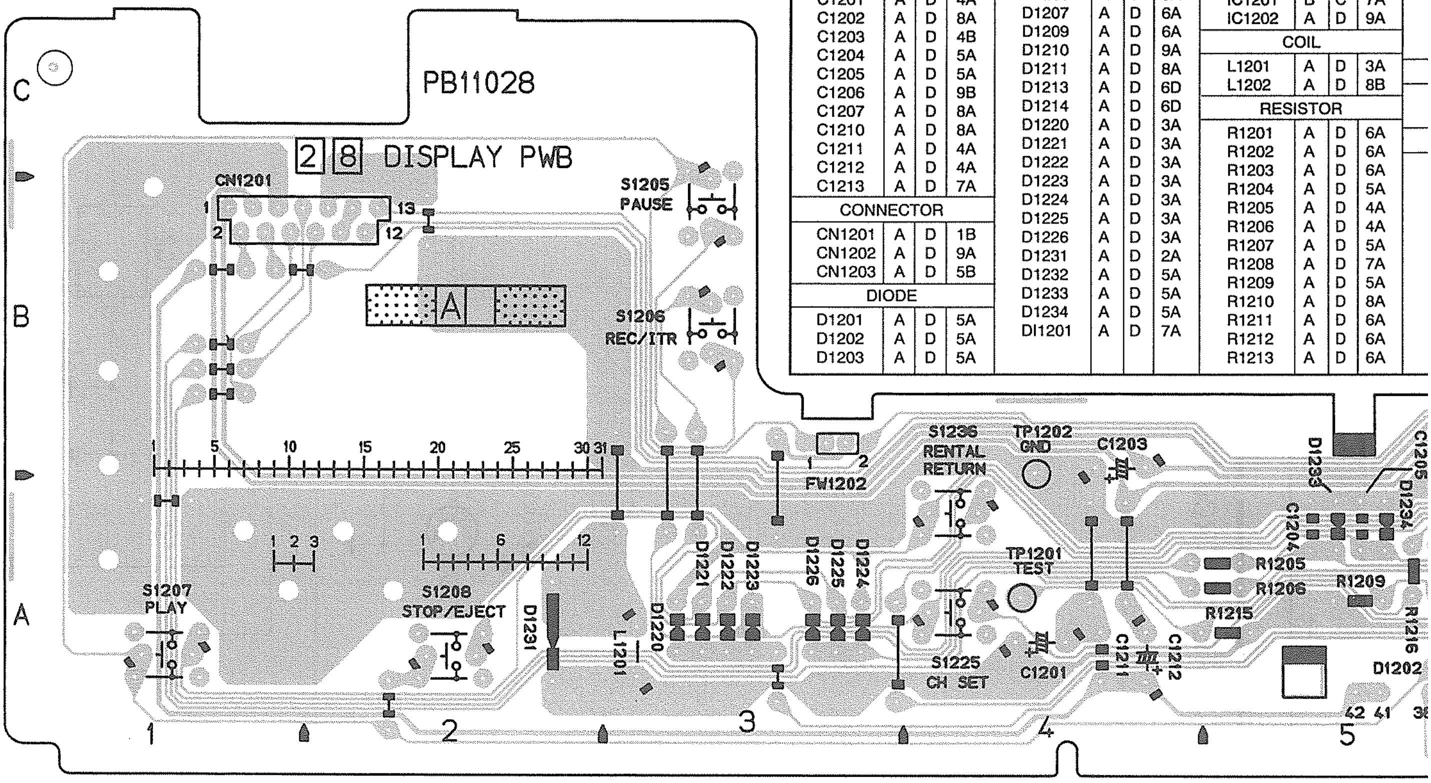
COMPONENT PARTS LOCATION GUIDE <DISPLAY PWB>

REF.No.	LOCATION		
CAPACITOR			
C1201	A	D	4A
C1202	A	D	8A
C1203	A	D	4B
C1204	A	D	5A
C1205	A	D	5A
C1206	A	D	9B
C1207	A	D	8A
C1210	A	D	8A
C1211	A	D	4A
C1212	A	D	4A
C1213	A	D	7A
CONNECTOR			
CN1201	A	D	1B
CN1202	A	D	9A
CN1203	A	D	5B
DIODE			
D1201	A	D	5A
D1202	A	D	5A
D1203	A	D	5A

REF.No.	LOCATION		
D1204	A	D	9A
D1206	A	D	9A
D1207	A	D	6A
D1209	A	D	6A
D1210	A	D	9A
D1211	A	D	8A
D1213	A	D	6D
D1214	A	D	6D
D1220	A	D	3A
D1221	A	D	3A
D1222	A	D	3A
D1223	A	D	3A
D1224	A	D	3A
D1225	A	D	3A
D1226	A	D	3A
D1231	A	D	2A
D1232	A	D	5A
D1233	A	D	5A
D1234	A	D	5A
DI1201	A	D	7A

REF.No.	LOCATION		
IC			
IC1201	B	C	7A
IC1202	A	D	9A
COIL			
L1201	A	D	3A
L1202	A	D	8B
RESISTOR			
R1201	A	D	6A
R1202	A	D	6A
R1203	A	D	6A
R1204	A	D	5A
R1205	A	D	4A
R1206	A	D	4A
R1207	A	D	5A
R1208	A	D	7A
R1209	A	D	5A
R1210	A	D	8A
R1211	A	D	6A
R1212	A	D	6A
R1213	A	D	6A

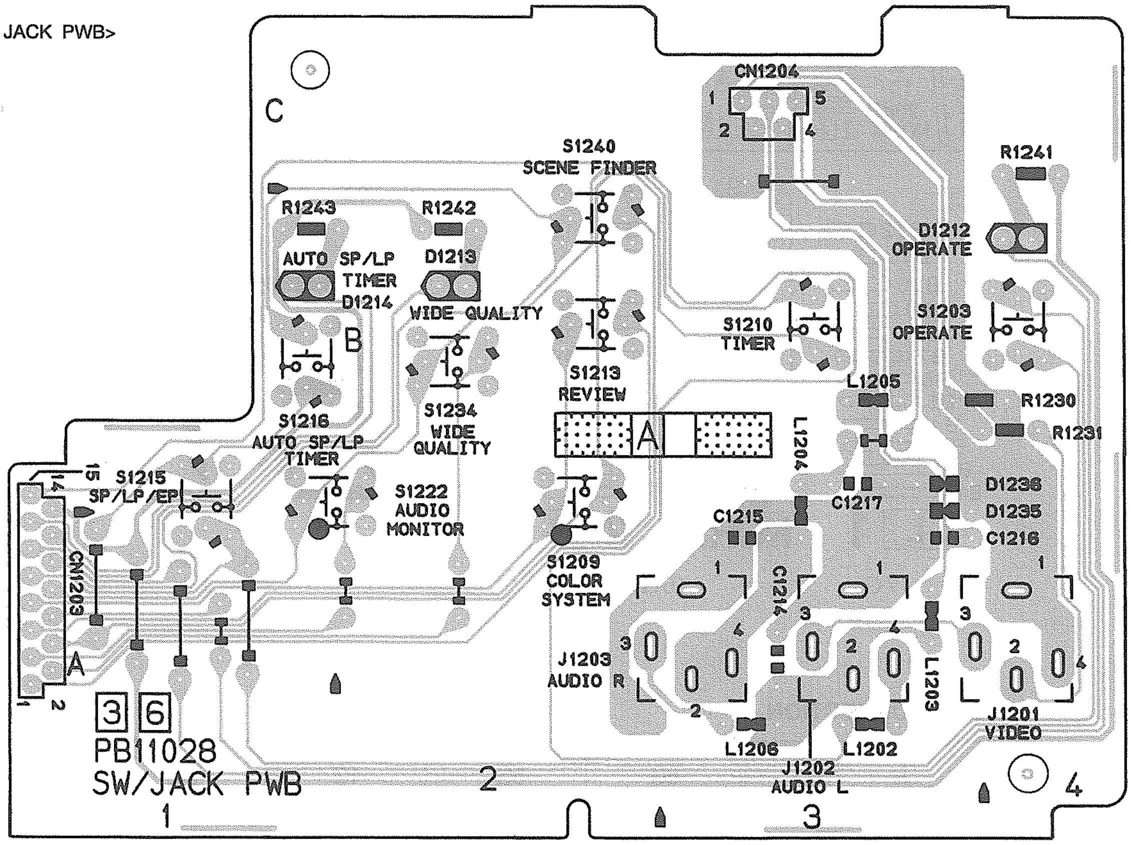
-DISPLAY-


C
B
A
PB11028
2 8 DISPLAY PWB
CN1201
1
2
13
12
A
S1205
PAUSE
S1206
REC/ITR
1
5
10
15
20
25
30
31
1 2 3
1
6
12
S1207
PLAY
S1208
STOP/EJECT
D1231
L1201
D1220
D1221
D1222
D1223
D1226
D1225
D1224
FW1202
1
2
S1236
RENTAL
RETURN
TP1202
GND
C1203
TP1201
TEST
S1225
CH SET
C1201
C1211
C1212
D1233
C1205
D1234
C1204
R1205
R1206
R1209
R1215
R1216
D1202
42
41
1
2
3
4
5

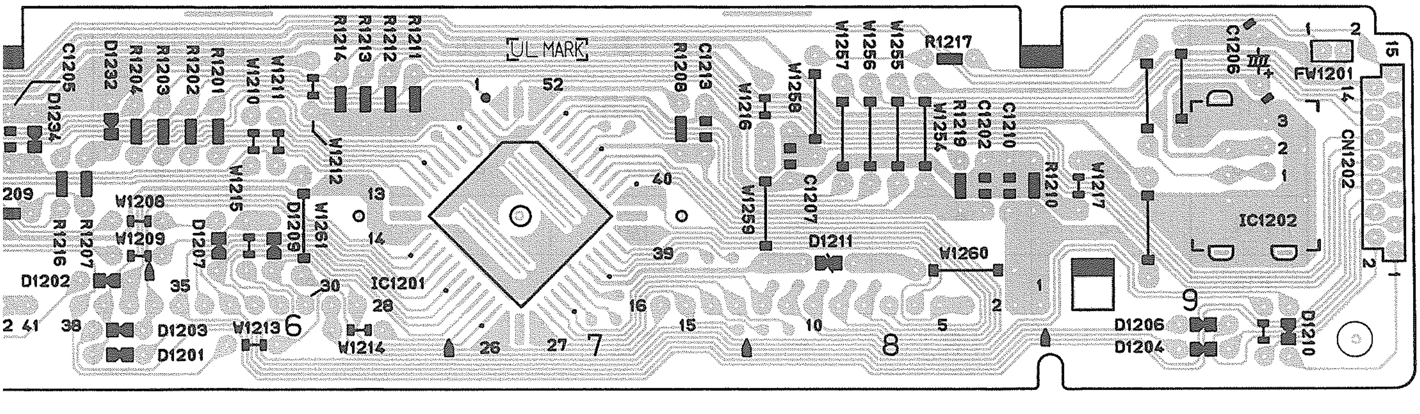
PARTS LOCATION GUIDE <SW / JACK PWB>

CATION		REF.No.	LOCATION		
R		OTHER			
D	3A	J1201	A	D	4A
D	3A	J1202	A	D	3A
D	3A	J1203	A	D	3A
D	3B	S1203	A	D	4B
OR		S1209	A	D	2B
D	1A	S1210	A	D	3B
D	3C	S1213	A	D	2B
		S1215	A	D	1B
		S1216	A	D	1B
D	4B	S1222	A	D	1B
D	2B	S1234	A	D	2B
D	1B	S1240	A	D	2B
D	3B				
D	3B				
D	3A				
D	3A				
D	3A				
D	3B				
D	3A				
R					
D	4B				
D	4B				
D	4C				
D	2B				
D	2B				

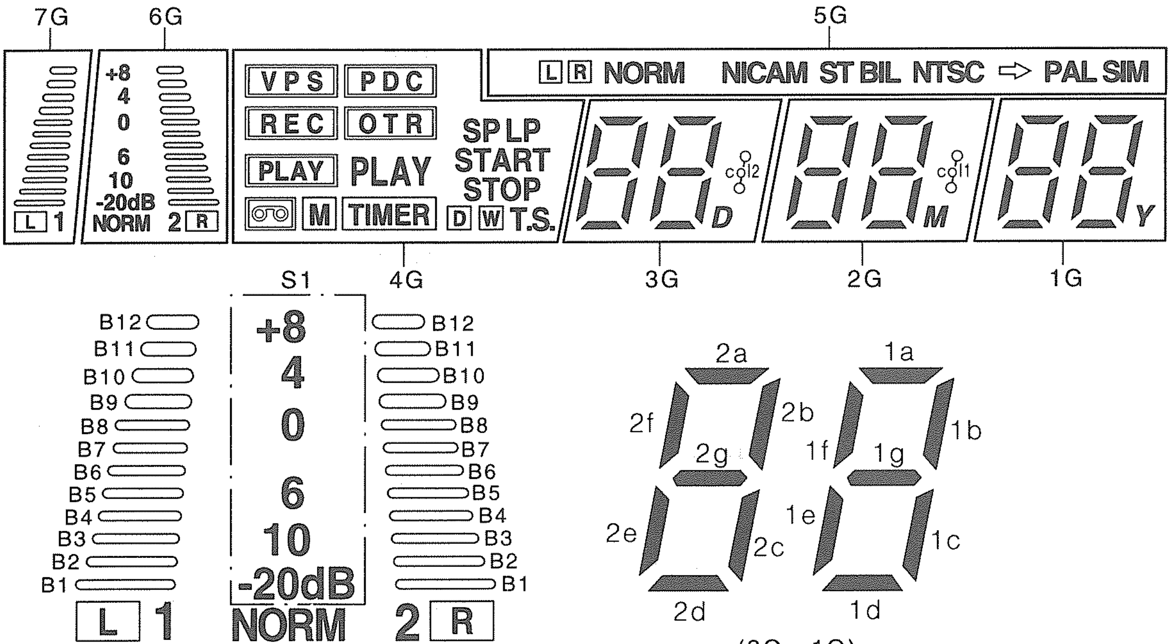
-SW/JACK-


C
CN1204
1
5
2
4
S1240
SCENE FINDER
R1241
R1243
R1242
D1212
OPERATE
AUTO SP/LP
TIMER
D1214
D1213
WIDE QUALITY
S1210
TIMER
S1203
OPERATE
B
S1216
AUTO SP/LP
TIMER
S1234
WIDE
QUALITY
S1213
REVIEW
L1205
R1230
R1231
A
L1204
15
14
S1215
SP/LP/EP
S1222
AUDIO
MONITOR
C1217
D1236
D1235
C1216
C1215
CN1203
S1209
COLOR
SYSTEM
C1214
J1203
AUDIO R
L1203
J1201
VIDEO
A
1
2
3
6
PB11028
SW/JACK PWB
L1206
L1202
J1202
AUDIO L
1
2
3
4

ION	REF.No.	LOCATION		
	R1214	A	D	6A
7A	R1215	A	D	5A
9A	R1216	A	D	5A
	R1217	A	D	8B
	R1219	A	D	8A
3A	TEST POINT			
8B	TP1201	A	D	4A
	TP1202	A	D	4B
6A	OTHER			
6A	FW1201	A	D	9B
6A	FW1202	A	D	3B
5A	J1203	A	D	7B
4A	S1205	A	D	3B
4A	S1206	A	D	3B
5A	S1207	A	D	1A
7A	S1208	A	D	2A
5A	S1225	A	D	4A
8A	S1236	A	D	4A
6A				
6A				
6A				


C1205
D1232
R1204
R1203
R1202
R1201
W1210
W1211
R1214
R1213
R1212
R1211
UL MARK
R1208
C1213
W1216
W1258
W1257
W1256
W1255
R1217
W1254
C1202
C1210
C1206
FW1201
CN1202
D1234
209
W1208
W1209
R1216
R1207
D1202
W1215
W1212
D1207
D1209
W1261
52
1
13
14
40
39
IC1201
28
30
35
38
41
2
D1203
D1201
W1213
6
W1214
26
27
7
16
15
W1259
C1207
D1211
10
W1260
8
5
2
1
R1210
W1217
IC1202
9
D1206
D1204
D1210
1
2
3
14
15

4.15 FDP GRID ASSIGNMENT AND ANODE CONNECTION


7G
6G
5G
+8
4
0
6
10
-20dB
NORM
L 1
2 R
VPS
PDC
REC
OTR
PLAY
PLAY
TIMER
M
SP LP
START
STOP
D W T.S.
L R NORM NICAM ST BIL NTSC ⇨ PAL SIM
col2
col1
D
M
Y
4G
3G
2G
1G
S1
B12
B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1
2a
1a
2f
2b
2g
1f
1g
1b
2e
2c
1e
1c
2d
1d

(7G) (6G) (3G～1G)

ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P 1	—	S 1	L	REC	1 a	1 a	1 a
P 2	1	2	R	PLAY	1 b	1 b	1 b
P 3	B12	B12	NORM	⊙⊙	1 f	1 f	1 f
P 4	B11	B11	NICAM	M	1 g	1 g	1 g
P 5	B10	B10	ST	OTR	1 c	1 c	1 c
P 6	B 9	B 9	BIL	NTSC	1 e	1 e	1 e
P 7	B 8	B 8	NTSC	TIMER	1 d	1 d	1 d
P 8	B 7	B 7	⇨	VPS	col2	col1	—
P 9	—	NORM	PAL	PDC	*D*	*M*	*Y*
P10	B 6	B 6	SIM	SP	2 a	2 a	2 a
P11	B 5	B 5	—	LP	2 b	2 b	2 b
P12	B 4	B 4	—	START	2 f	2 f	2 f
P13	B 3	B 3	—	STOP	2 g	2 g	2 g
P14	B 2	B 2	—	D	2 c	2 c	2 c
P15	B 1	B 1	—	W	2 e	2 e	2 e
P16	L	R	—	T.S.	2 d	2 d	2 d

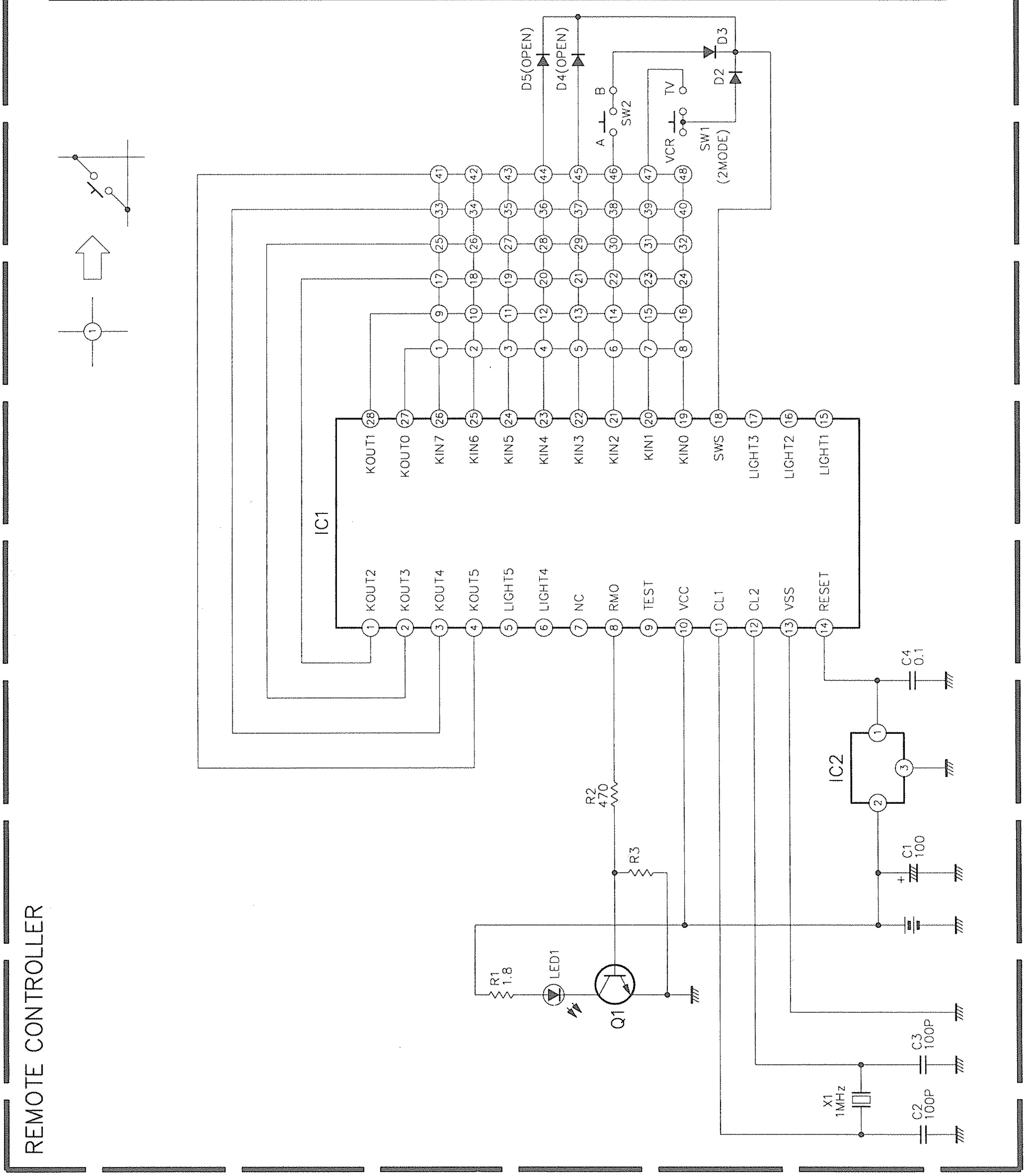
PEDP0160

4.16 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

PEAC0442

Key No.	Key Name
1	PUSH JOG >>
2	-
3	R.A.EDIT
4	SCENE FINDER
5	PRG CHK
6	7
7	8
8	9
9	ILLUMI GUIDE
10	TV PROG +
11	CH +/TV VOL +
12	PROG
13	OK
14	CANCEL
15	0
16	TIMER
17	OPERATE
18	-
19	AUDIO MONITOR
20	-/--
21	TV/VIDEO
22	RE-VIEW
23	CH SEARCH
24	CH STORE
25	STOP -
26	DATE +
27	DATE -
28	START -
29	TV PROG -
30	CLOCK
31	DISPLAY
32	MODE
33	START +
34	PUSH JOG <<
35	PLAY
36	REW
37	FF
38	1
39	2
40	3
41	CH -/TV VOL -
42	STOP +
43	STOP
44	REC
45	PAUSE
46	4
47	5
48	6
44+35	REC PLAY
44+45	REC PAUSE

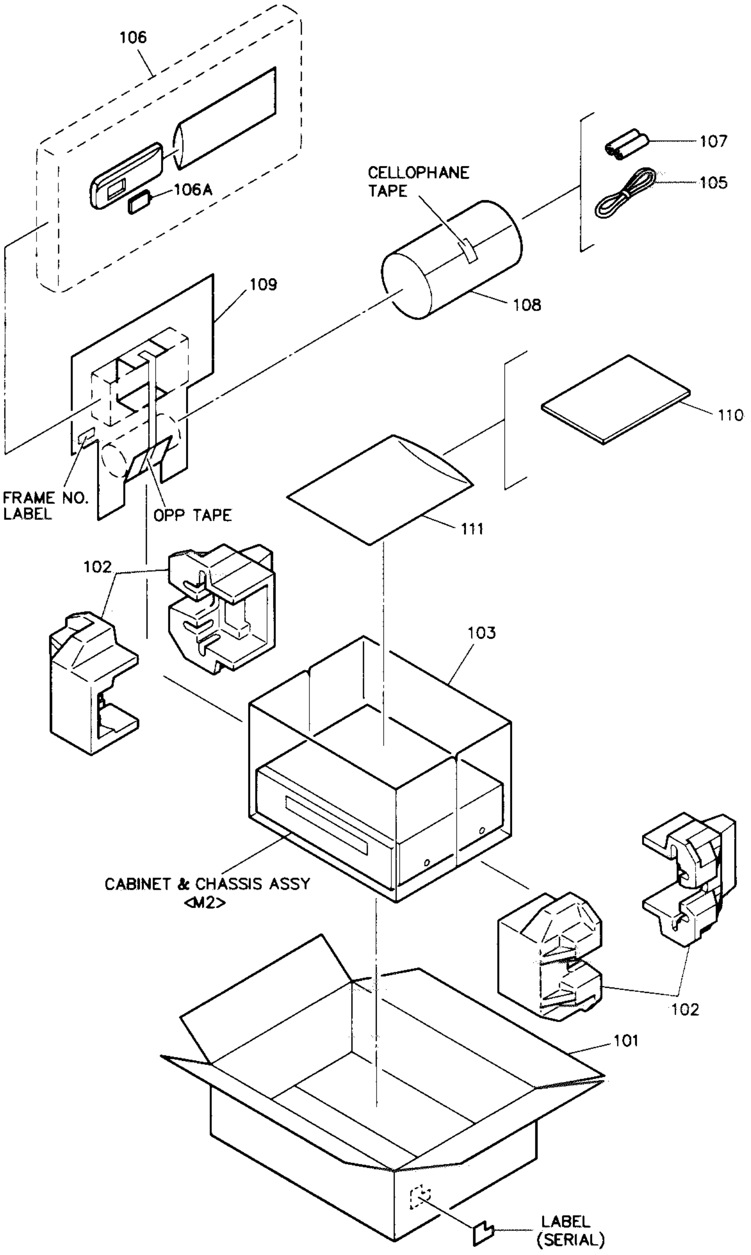

D5(OPEN)
D4(OPEN)
D3
D2
A
B
SW2
VCR
TV
SW1
(2MODE)
IC1
KOUT1
KOUT0
KIN7
KIN6
KIN5
KIN4
KIN3
KIN2
KIN1
KIN0
SWS
LIGHT3
LIGHT2
LIGHT1
KOUT2
KOUT3
KOUT4
KOUT5
LIGHT5
LIGHT4
NC
RMO
TEST
VCC
CL1
CL2
VSS
RESET
C4
0.1
IC2
C1
100
R2
470
R3
R1
1.8
LED1
Q1
C3
100P
X1
1MHz
C2
100P
REMOTE CONTROLLER

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>


106
106A
CELLOPHANE TAPE
107
105
109
108
110
FRAME NO. LABEL
OPP TAPE
111
102
103
CABINET & CHASSIS ASSY <M2>
102
101
LABEL (SERIAL)

****

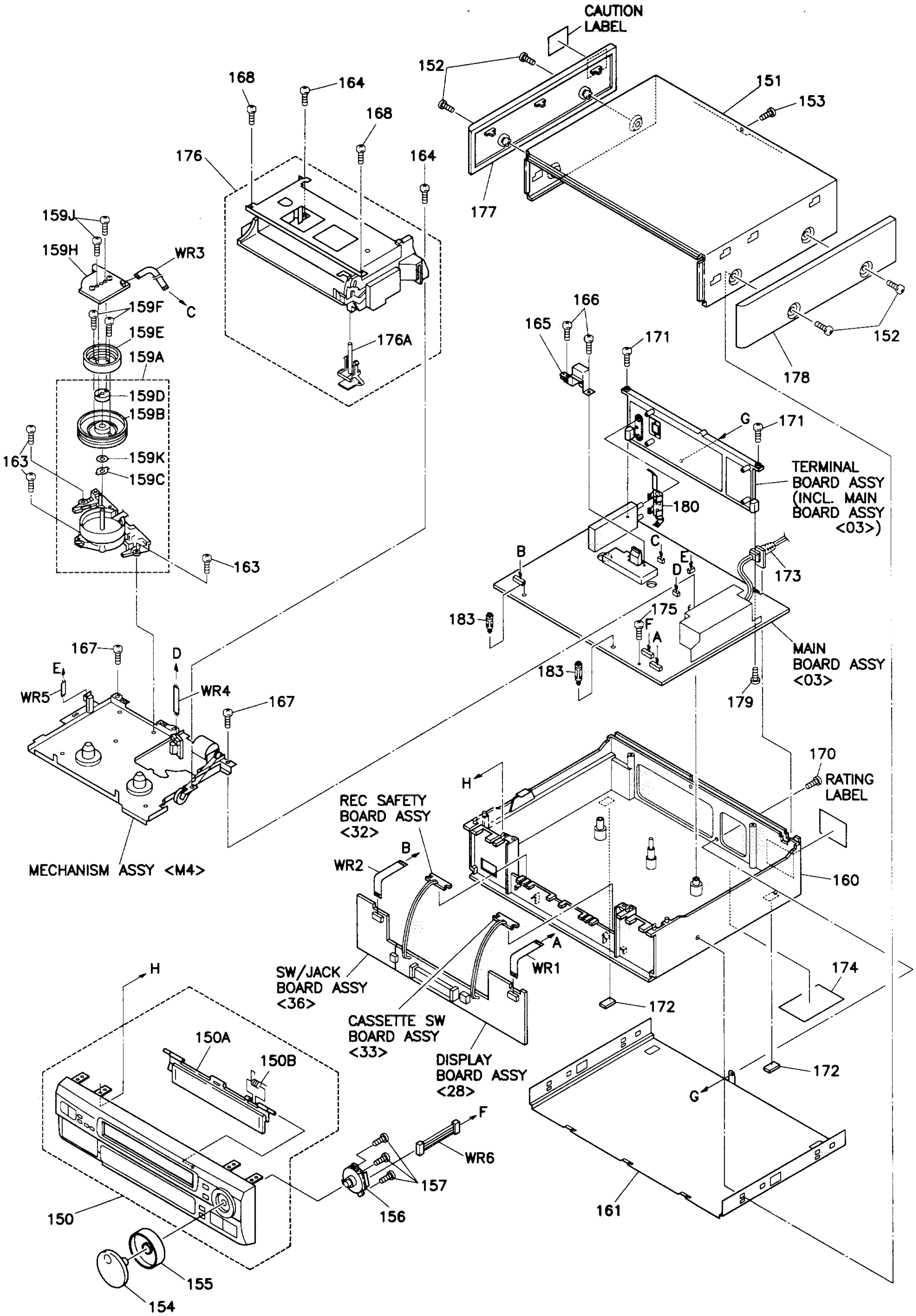
PACKING AND ACCESSORY ASSEMBLY <M1>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	101	PQ35361-17	PACKING CASE
	102	PQ35362A-1	CUSHION ASSEMBLY
	103	PQM30021-95	POLY(FOAM)BAG
	105	PEAC0348	RF CABLE
⚠	106	PQ21953M	REMOTE CONTROLLER
	106A	PQ46614-2	COVER(BATTERY)
	107	PECA0909	BATTERY,X2
	108	PQ35364	POLY BAG
	109	PQ35575-1-1	SHEET,REMOTE CONTROLLER
⚠	110	PU30425-1824	INSTRUCTIONS,ENGLISH CZECH POLISH
⚠		PU30425-1825	INSTRUCTIONS,RUSSIAN HUNGARIAN
	111	PQ35364-4	POLY BAG

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



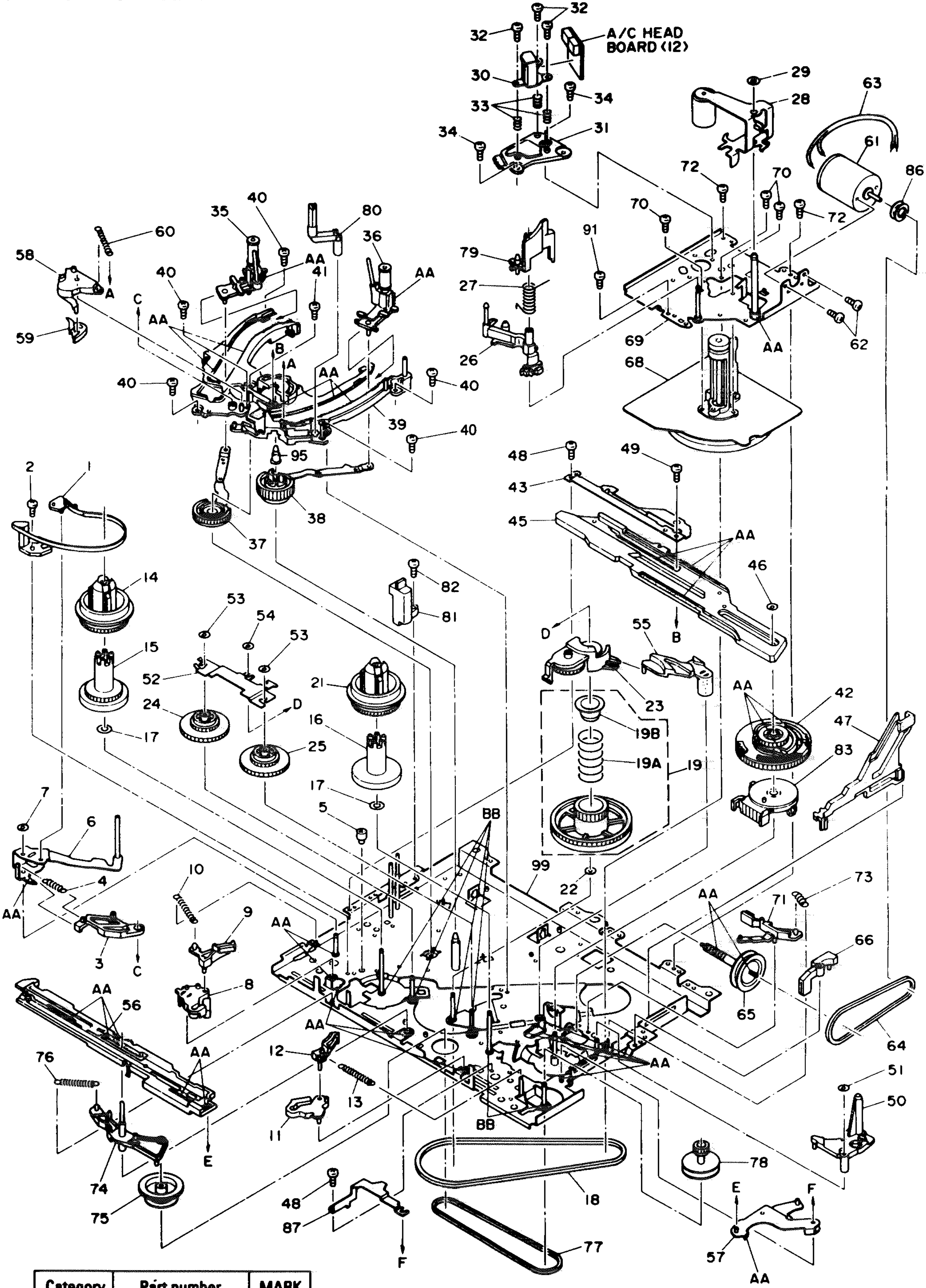
CAUTION LABEL
152
168
164
168
151
153
176
164
177
159J
159H
WR3
C
159F
159E
159A
159D
159B
159K
159C
163
163
176A
166
165
171
152
178
G
171
TERMINAL BOARD ASSY (INCL. MAIN BOARD ASSY <03>)
180
B
C
E
D
173
183
175
F
A
MAIN BOARD ASSY <03>
183
179
167
E
D
WR5
WR4
167
170
RATING LABEL
H
REC SAFETY BOARD ASSY <32>
B
WR2
MECHANISM ASSY <M4>
160
A
WR1
174
H
SW/JACK BOARD ASSY <36>
172
CASSETTE SW BOARD ASSY <33>
150A
150B
DISPLAY BOARD ASSY <28>
172
G
F
WR6
157
150
156
161
155
154

* *

CABINET AND CHASSIS ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	150	PQ11802AP	FRONT PANEL ASSEMBLY
	150A	PQ21818-22	CASSETTE DOOR
	150B	PQ46448	TORSION SPRING
⚠	151	PQ11676-31	TOP COVER
	152	PQ43930	SPECIAL SCREW,X4
	153	SDSF3010M	SCREW
	154	PQ35247-5	KNOB(JOG)
	155	PQ35295-5	KNOB(SHUTTLE)
	156	PEME0757-03	JOG SHUTTLE ASSEMBLY
	157	SDSF2608Z	SCREW,X3 JOG
	159A	PDM2261AC	DRUM SUB ASSEMBLY
	159B	PDM3353AW	UPPER DRUM ASSEMBLY
	159C	PDM4440A	BRUSH ASSEMBLY
	159D	PDM4345A	COLLAR ASSEMBLY
	159E	PDZ0141-2	ROTOR ASSEMBLY
	159F	SPSH2660Z	SCREW,X2
⚠	159H	PDZ0141-1-2	STATOR ASSEMBLY
	159J	SPSP2606Z	SCREW,X2
	159K	PDM4050-9	WASHER
⚠	160	PQ11666-3-14	BOTTOM CHASSIS
⚠	161	PQ11668-2	BOTTOM COVER
	163	SPST2608Z	SCREW,X3 DRUM
	164	SPST2606Z	SCREW,X2 CASS HOUS ASSY
	165	PQ35385-1-1	SHIELD COVER,PRE/REC
	166	SDST2606Z	SCREW,X2 PRE/REC
	167	SDSF4012Z	SCREW,X2 MECH
	168	SDSF3010Z	SCREW,X2 CASS HOUS ASSY
	170	SDSF3010M	SCREW,TERMINAL
	171	SDSF3010Z	SCREW,X2 TERMINAL
	172	PQ43013-3	FOOT,X2
⚠	173	QMP4A10-170	POWER CORD
⚠	174	PQ46485	SPACER(SAFETY),BOTTOM CHASSIS
	175	SDSF3010Z	SCREW,MAIN BOARD
	176	PUS29724B-1	CASSETTE HOUSING ASSY
	176A	PQ46359	CASSETTE SWITCH PIN
	177	PQ11842	SIDE PANEL(L)
	178	PQ11843	SIDE PANEL(R)
	179	SDSF3008Z	SCREW,MAIN
	180	PQ21623-1-2	EARTH PLATE(RF),TUNER
	183	PEME0947-01-01	SPACER,X2 MECHA
	WR1	PW30802-1314	WIRE,DISPLAY/SWITCH
	WR2	PW30803-0514	WIRE,SW/JACK
	WR3	PW30803-0414	WIRE,DRUM
	WR4	PW30101-C0HH887	WIRE,A/C HEAD
	WR5	PW30701-32AAYY	WIRE,FE HEAD
	WR6	PW30218-0831613	WIRE,JOG

5.3 MECHANISM ASSEMBLY <M4>


32
32
A/C HEAD BOARD (12)
30
29
28
63
33
34
34
31
61
72
70
86
70
72
62
AA
69
68
91
79
27
26
35
40
80
36
60
58
40
41
AA
AA
C
AA
A
B
A
59
40
AA
39
40
40
95
38
37
2
1
14
48
49
43
45
AA
46
82
81
53
54
53
D
55
B
15
52
21
D
23
24
16
19B
17
25
19A
19
AA
42
47
83
17
7
5
6
BB
99
10
4
22
73
AA
AA
71
9
3
C
AA
66
AA
8
56
65
64
AA
12
AA
76
13
AA
11
BB
51
50
E
78
74
18
75
48
E
F
87
57
77
F
AA

Category	Part number	MARK
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

****

MECHANISM ASSEMBLY <M4>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ46298A-5	TENSION BAND ASSEMBLY
	2	SDST2608Z	SCREW
	3	PQ35012-1-5	TENSION ARM LEVER
	4	PQM30001-385109	TENSION SPRING
	5	PQ46302-1-3	ADJUST PIN
	6	PQ46303B-8	TENSION ARM ASSEMBLY
	7	PQM30017-47	SLIT WASHER
	8	PQ46305B-3	MAIN BRAKE ASSEMBLY (SUPPLY)
	9	PQ46306A-3	SUB BRAKE ASSEMBLY (SUPPLY)
	10	PQM30001-393	TENSION SPRING
	11	PQ46308A-5	MAIN BRAKE ASSEMBLY (TAKE UP)
	12	PQ46309A-4	SUB BRAKE ASSEMBLY (TAKE UP)
	13	PQM30001-389102	TENSION SPRING
	14	PQ46535A-2	REEL DISK ASSEMBLY(SUPPLY)
	15	PQ35014-1-1	SLIT DISK (SUPPLY)
	16	PQ35015-1-1	SLIT DISK (TAKE UP)
	17	PQM30018-69	SPACER,X2
	18	PQM30003-38	BELT(CAPSTAN)
	19	PQ46497B-2	PULLEY ASSEMBLY
	19A	PQM30002-233	COMPRESION SPRING
	19B	PQ46311	SPRING CAP
	21	PQ46498A-3	REEL ASSEMBLY (TAKE UP)
	22	PQM30018-69	SPACER
	23	PQ46312B-9	IDLER ARM ASSEMBLY
	24	PQ46316A-4	CLUTCH UNIT (SUPPLY)
	25	PQ46323A-1	CLUTCH UNIT (TAKE UP)
	26	PQ46325B-9	GUIDE ARM ASSEMBLY
	27	PQ46326-2	TORSION SPRING
	28	PQ46327A-4	PINCH ROLLER ARM ASSEMBLY
	29	PQM30017-24	SLIT WASHER,P LEVER
	30	PEHE0182	AUDIO CONTROL HEAD
	31	PQ35206-1-3	HEAD BASE
	32	PQ43687A	SCREW,X3
	33	PQM30002-192	COMPRESSION SPRING,X3
	34	SDSP2604Z	SCREW,X2
	35	PQ46595A-5	POLE BASE ASSEMBLY (SUPPLY)
	36	PQ46597A	POLE BASE ASSEMBLY (TAKE UP)
	37	PQ46332A-3	LOADING ARM ASSEMBLY (SUPPLY)
	38	PQ46337C	LOADING ARM ASSEMBLY (TAKE UP)
	39	PQ11657-1-9	GUIDE RAIL
	40	SPST2608Z	SCREW,X5
	41	SDST2612Z	SCREW
	42	PQ21684-1-3	CONTROL CAM
	43	PQ35138-1-2	CONTROL BRACKET
	45	PQ11658-1-15	CONTROL PLATE
	46	PQM30017-8	SLIT WASHER
	47	PQ21685-2-9	PINCH PLATE
	48	SPST2606Z	SCREW,X2
	49	SPSF2608M	SCREW
	50	PQ46342B-10	LEVER ASSEMBLY
	51	PQM30017-8	SLIT WASHER
	52	PQ35083-1-8	REEL BRACKET
	53	PQM30017-51	SLIT WASHER,X2
	54	Q03093-830	WASHER
	55	PQ35026-1-7	IDLER LEVER
	56	PQ11659-1-12	SLIDE PLATE
	57	PQ46344A-2	CHANGE LEVER ASSEMBLY
	58	PQ21686-1-3	TAKE UP LEVER
	59	PQ46345-1-2	TAKE UP HEAD
	60	PQM30001-387106	TENSION SPRING
⚠	61	PU60628-3-2	LOADING MOTOR
	62	SPSP3003Z	SCREW,X2
	63	PW30101-80AJ632	WIRE
	64	PQM30003-39	BELT
	65	PQ46395B	WORM GEAR ASSEMBLY
	66	PQ21699-1-2	WORM BEARING
⚠	68	PU61487-2-3	CAPSTAN MOTOR
	69	PQ46347F-16	SUB DECK ASSEMBLY
	70	SPSG2608Z	SCREW,X3
	71	PQ46356C-3	CAPSTAN BRAKE ASSEMBLY
	72	SPST2606Z	SCREW,X2
	73	PQM30001-384101	TENSION SPRING,CAPSTAN BRAKE
	74	PQ46353A-2	CHANGE ARM ASSEMBLY
	75	PQ46354	CHANGE GEAR
	76	PQM30001-386	TENSION SPRING
	77	PQM30003-40	BELT
	78	PQ46355	CASSETTE GEAR
	79	PQ35030-1-5	LID GUIDE
	80	PQ21689-2	LED PRISM
	81	PEHE0237	FULL ERASE HEAD
	82	SDST2610Z	SCREW
	83	PU61432-1-1	ROTARY ENCODER
	86	PQ43546-1-2	MOTOR PULLEY
	87	PQ35217-1-2	CONTROL BRACKET 2
	91	SDSP2604Z	SCREW
	95	PQ46767	GUIDE CAP
	99	PQ21680H	MAIN DECK ASSEMBLY

5.4 ELECTRICAL PARTS LIST

****

MAIN BOARD ASSEMBLY <03>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	PB11003M	MAIN BOARD ASSEMBLY
IC1	HA118203AF	IC
IC2	MSM7470-70MS-XE	IC
IC101	HA118195NT	IC
IC401	JCP0056	IC
IC402	BA6138	IC
IC501	LA7257	IC
IC701	HD6433928TA49F	QFP IC (MCU)
IC702	X24C02P	IC
	or XL24C02P	IC
	or 24LC02B/P	IC
	or AT24C02-10PC	IC
IC703	S-80728AN-Z	IC
	or RE5VL28A	IC
	or RE5VA28A	IC
IC704	TA7291S	IC
IC705	M50253P	IC
	or BU2090	IC
IC706	M50253P	IC
	or BU2090	IC
IC1001	AN1358	IC
	or AN6562-SG	IC
	or M5223P	IC
	or TA75358P	IC
IC1101	BU2885BS	IC
	or BU2884BS	IC
IC1301	LC74783-9194	IC (OSD)
Q1	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q3	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q4	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q5	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q8	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q9	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q15	2SA1576(QR)	TRANSISTOR
	or 2SB1218A(QR)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q19	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q20	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q101	2SC4081(RS)	TRANSISTOR
	or 2SD1819A(RS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q102	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q103	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q104	2SC4081(RS)	TRANSISTOR
	or 2SD1819A(RS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q201	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q211	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q231	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q259	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q304	DTA114ES	TRANSISTOR
Q305	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q306	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q307	2SA1576(QR)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q308	2SA1576(QR)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q310	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q312	DTC144WU	TRANSISTOR
	or UN521E	TRANSISTOR
Q314	DTA144WU	TRANSISTOR
	or UN511E	TRANSISTOR
Q503	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q701	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q704	PN268VI	PH TRANSISTOR
Q705	PN268VI	PH TRANSISTOR
Q708	DTC114EU	TRANSISTOR
	or UN5211	TRANSISTOR
Q711	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q712	DTC114ES	TRANSISTOR
Q901	2SK2632-CB14	FE TRANSISTOR
	or 2SK2129-LT	FE TRANSISTOR
Q902	2SC3616(ML)	TRANSISTOR
Q951	2SD1913(RS)	TRANSISTOR
	or 2SD2061(F)	TRANSISTOR
Q952	2SC4081(RS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q953	2SC3616(MLK)	TRANSISTOR
Q954	DTA114EU	TRANSISTOR
	or UN5111	TRANSISTOR
Q955	2SD2144S(UVW)	TRANSISTOR
Q958	2SC1740S(RS)	TRANSISTOR
	or 2SC3199(GB)-TJK	TRANSISTOR
Q1001	DTA114EU	TRANSISTOR
	or UN5111	TRANSISTOR
Q1002	DTA114EU	TRANSISTOR
	or UN5111	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
Q1003	DTA114EU	TRANSISTOR
	or UN5111	TRANSISTOR
Q1004	2SC2001(LK)	TRANSISTOR
Q1006	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q1007	2SC4081(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1008	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1009	2SA1576(QRS)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q1010	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1012	2SC4081(RS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1014	2SC4081(QRS)	TRANSISTOR
Q1141	2SC3199(G)	TRANSISTOR
Q1301	2SC4081(QRS)	TRANSISTOR
	or 2SD1819A(QRS)	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q1302	2SA1576(QR)	TRANSISTOR
	or 2SB1218A(QR)	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
D5	1SS133	DIODE
	or 1N4148M	DIODE
D11	1SS133	DIODE
	or 1N4148M	DIODE
D12	1SS133	DIODE
	or 1N4148M	DIODE
D13	1SS133	DIODE
	or 1N4148M	DIODE
D14	1SS133	DIODE
	or 1N4148M	DIODE
D151	1N4148M	DIODE
	or 1SS133	DIODE
D152	1N4148M	DIODE
	or 1SS133	DIODE
D201	1SS133	DIODE
	or 1N4148M	DIODE
D301	1N4148M	DIODE
	or 1SS133	DIODE
D461	1N4148M	DIODE
	or 1SS133	DIODE
D502	1N4148M	DIODE
	or 1SS133	DIODE
D503	1N4148M	DIODE
	or 1SS133	DIODE
D504	1N4148M	DIODE
	or 1SS133	DIODE
D505	1N4148M	DIODE
	or 1SS133	DIODE
D701	RD9.1ES-T1B2	ZENER DIODE
	or MTZJ9.1(B)	ZENER DIODE
D702	11ES2	DIODE
D703	1N4148M	DIODE
	or 1SS133	DIODE
D704	11ES2	DIODE
D705	1N4148M	DIODE
	or 1SS133	DIODE
D706	1N4148M	DIODE
	or 1SS133	DIODE
D710	SIR-381SB3FM	LE DIODE,S.E.SENSOR
	or SIR-381SB3FX1M	LE DIODE
D711	1N4148M	DIODE
	or 1SS133	DIODE
D714	1N4148M	DIODE,OSD
	or 1SS133	DIODE
D715	1N4148M	DIODE
	or 1SS133	DIODE
D851	1N4148M	DIODE
	or 1SS133	DIODE
D852	1N4148M	DIODE
	or 1SS133	DIODE
D901	S1WB(A)60F4102	BRIDGE DIODE
	or S1WB(A)60F4072X	BRIDGE DIODE
	or S1WB(A)60F4062X	BRIDGE DIODE
D908	1SS133	DIODE
	or 1N4148M	DIODE
D909	UZ27BSB	ZENER DIODE
	or MTZJ27(B)	ZENER DIODE
	or RD27ES-T1B2	ZENER DIODE
D910	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
D911	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE
D952	FML-12S	FR DIODE
	or MA644	FR DIODE
	or YG901C2	FR DIODE
	or FCF06A20	FR DIODE
D954	FMB-24	BARRIER DIODE
	or F5KQ40B	BARRIER DIODE
	or MA7D49	SB DIODE
	or YG801C04	SB DIODE
D955	RD15ES-T1B1	ZENER DIODE
	or UZ15BSA	ZENER DIODE
	or MTZJ15(A)	ZENER DIODE
D956	RD6.2ES-T1B3	ZENER DIODE
	or MTZJ6.2(C)	ZENER DIODE
	or UZ6.2BSC	ZENER DIODE
D958	RD30ES-T1B1	ZENER DIODE
	or MTZJ30(A)	ZENER DIODE
	or UZ30BSA	ZENER DIODE
D960	1SS133	DIODE
	or 1N4148M	DIODE
D962	RD5.1JSB2	DIODE
	or MA4051N(M)	ZENER DIODE
D963	1SS133	DIODE
	or 1N4148M	DIODE
D965	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
D966	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D968	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D969	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D1001	MTZ10D	ZENER DIODE	
D1002	HZT31	ZENER DIODE	
D1003	DA204U	DIODE	
R1	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R2	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R3	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R4	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R5	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R6	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R8	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R9	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R10	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R11	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R12	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R13	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R14	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R15	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R16	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R17	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R18	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R19	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R20	QRD123J-331SX	RESISTOR	330Ω,1/2W
R21	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R22	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R23	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
R24	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R25	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R26	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R27	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R28	QRSA08J-560YN	RESISTOR	56Ω,1/10W
R30	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R31	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R32	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R36	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R37	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
R39	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R41	QRSA08J-200YN	RESISTOR	20Ω,1/10W
R43	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R45	QRD161J-335	RESISTOR	3.3MΩ,1/6W
R48	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R49	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R51	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R53	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R57	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R58	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R59	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R61	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R62	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R63	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R64	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R65	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R66	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R69	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R70	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R71	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R72	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R73	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R101	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R102	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R104	NRVA62D-152N	RESISTOR	1.5kΩ,1/16W
R105	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R106	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R107	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R110	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R113	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R201	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R203	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R211	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R212	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R213	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R231	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R232	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R233	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R234	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R235	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R280	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R283	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R285	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R286	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R287	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R288	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R289	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R290	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R301	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R307	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R308	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R309	QRSA08J-121YN	RESISTOR	120Ω,1/10W
R310	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R311	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R312	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R313	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R314	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R316	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R317	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R318	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R319	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R320	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R321	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R322	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R323	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R324	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R325	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
R326	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R327	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R334	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R335	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R337	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R338	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R339	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R340	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R341	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R342	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R344	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R346	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R347	QRSA08J-101YN	RESISTOR	100Ω,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R348	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R401	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R402	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R404	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R405	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R407	QRSA08J-511YN	RESISTOR	510Ω,1/10W
R408	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R409	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R410	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R411	NRVA62B-153N	RESISTOR	15kΩ,1/16W
R412	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R415	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R416	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R417	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R418	NRVA62B-113N	RESISTOR	11kΩ,1/16W
R419	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R420	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R421	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R422	QRSA08J-511YN	RESISTOR	510Ω,1/10W
R424	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R425	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R427	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R428	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R430	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R432	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R434	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R435	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R436	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R437	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R438	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R440	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R441	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R442	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R443	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R461	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R462	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R501	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R502	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R503	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R506	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R507	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R516	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
R517	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R518	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R519	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R520	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R521	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R522	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R523	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R524	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R525	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R701	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R702	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R703	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R704	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R705	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R706	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R707	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R708	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R709	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R710	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R711	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R712	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R713	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R714	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R717	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R718	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R720	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R722	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R724	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R725	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R726	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R727	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R728	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R729	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R730	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R731	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R732	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R733	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R734	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R735	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R736	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R738	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R739	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R740	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R741	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R742	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R743	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R744	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R745	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R746	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R747	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R748	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R749	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R751	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R752	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R753	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R754	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R755	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R759	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R762	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R763	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R766	QRD161J-474	RESISTOR	470kΩ,1/6W
R767	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
R769	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R770	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R771	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R774	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R775	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R776	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R777	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R778	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R779	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R780	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R781	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R782	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R785	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R786	QRD161J-750	RESISTOR	75Ω,1/6W
R787	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R788	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R789	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R790	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R798	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R800	QRSA08J-471YN	RESISTOR	470Ω,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R801	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R807	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R809	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R810	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R814	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R815	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R816	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R817	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R818	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R821	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R852	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R855	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R856	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R857	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R858	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R859	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R863	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R866	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R867	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R868	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R870	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R871	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R872	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R873	QRSA08J-221YN	RESISTOR	220Ω,1/10W
	R901	QRD161J-224	RESISTOR	220kΩ,1/6W
	R902	QRD161J-224	RESISTOR	220kΩ,1/6W
	R903	QRD161J-683	RESISTOR	68kΩ,1/6W
	R904	QRD121J-181S	RESISTOR	180Ω,1/2W
	R905	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R906	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R907	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R908	QRG02DJ-393X	OMF RESISTOR	39kΩ,2W
	R909	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R910	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R911	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
	R912	QRG02DJ-393X	OMF RESISTOR	39kΩ,2W
	R951	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R952	QRV144F-2211AY	CMF RESISTOR	2.21kΩ,1/4W
	R953	QRV144F-3481AY	CMF RESISTOR	3.48kΩ,1/4W
	R954	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R955	QRG02DJ-222X	OMF RESISTOR	2.2kΩ,2W
⚠	R957	QRZ0077-101X	FUSIBLE RESISTOR	100Ω,1/4W
	R958	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R959	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R960	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R961	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R962	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R963	QRD161J-511	RESISTOR	510Ω,1/6W
	R964	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R965	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R966	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R970	QRG01DJ-100X	RESISTOR	10Ω,1W
	R1002	QRD161J-331	RESISTOR	330Ω,1/6W
	R1005	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
	R1007	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1008	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1009	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R1010	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R1011	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R1012	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R1013	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R1014	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1015	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
	R1016	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
	R1017	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R1018	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R1019	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1020	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1021	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R1022	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R1023	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1024	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R1025	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1026	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R1027	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R1028	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R1029	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1035	QRSA08J-181YN	RESISTOR	180Ω,1/10W
	R1036	QRSA08J-821YN	RESISTOR	820Ω,1/10W
	R1038	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1039	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R1040	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R1041	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R1102	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R1103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1106	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R1107	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R1108	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1109	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R1111	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R1112	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R1113	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1114	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1141	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R1142	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R1143	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R1301	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R1307	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1308	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R1309	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	C3	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C4	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C5	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C6	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C7	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C9	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C10	QCC11CK-104	CAPACITOR	0.1μF,16V
	C11	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C12	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C13	QCYA1EK-683	CAPACITOR	0.068μF,25V
	C14	QCTA1CH-151	CAPACITOR	150pF,16V
	C15	QCTA1CH-560	CAPACITOR	56pF,16V
	C16	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C17	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
	C18	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C19	QCYA1EK-683	CAPACITOR	0.068μF,25V
	C20	QCYA1EK-333	CAPACITOR	0.033μF,25V
	C21	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C22	QCC11CK-104	CAPACITOR	0.1μF,16V
	C23	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C24	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C25	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
	C26	QEKJ1CM-106	E CAPACITOR	10μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C27	QEKJ1CM-106	E CAPACITOR	10μF,16V
C28	QCYA1HK-103	CAPACITOR	0.01μF,50V
C29	QEKJ1CM-106	E CAPACITOR	10μF,16V
C30	QEKJ1HM-104	E CAPACITOR	0.1μF,50V
C31	QCYA1EK-104	CAPACITOR	0.1μF,25V
C32	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
C34	QCYA1EK-473	CAPACITOR	0.047μF,25V
C35	QCYA1EK-104	CAPACITOR	0.1μF,25V
C36	QCTA1CH-390	CAPACITOR	39pF,16V
C37	QCYA1EK-104	CAPACITOR	0.1μF,25V
C38	QCTA1CH-151	CAPACITOR	150pF,16V
C41	QCYA1HK-103	CAPACITOR	0.01μF,50V
C42	QCYA1HK-103	CAPACITOR	0.01μF,50V
C43	QCYA1EK-104	CAPACITOR	0.1μF,25V
C44	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C45	QCYA1EK-104	CAPACITOR	0.1μF,25V
C46	QCYA1EK-104	CAPACITOR	0.1μF,25V
C47	QEKJ1CM-476	E CAPACITOR	47μF,16V
C48	QETC0JM-477	E CAPACITOR	470μF,6.3V
C49	QEKJ1CM-106	E CAPACITOR	10μF,16V
C50	QCYA1HK-103	CAPACITOR	0.01μF,50V
C51	QEKJ1CM-476	E CAPACITOR	47μF,16V
C52	QEKJ1CM-106	E CAPACITOR	10μF,16V
C53	QCTA1CH-181	CAPACITOR	180pF,16V
C54	QEKJ1HM-105	E CAPACITOR	1μF,50V
C56	QCTA1CH-7R0	CAPACITOR	7pF,16V
C57	QCTA1CH-7R0	CAPACITOR	7pF,16V
C59	QCTA1CH-680	CAPACITOR	68pF,16V
C61	QCTA1CH-3R0	CAPACITOR	3pF,16V
C63	QCYA1HK-331	CAPACITOR	330pF,50V
C80	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C101	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C102	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C103	QCYA1EK-104	CAPACITOR	0.1μF,25V
C104	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C105	QCYA1EK-473	CAPACITOR	0.047μF,25V
C106	QCYA1HK-272	CAPACITOR	0.0027μF,50V
C107	QCYA1HK-103	CAPACITOR	0.01μF,50V
C110	QCYA1EK-223	CAPACITOR	0.022μF,25V
C111	QCYA1EK-223	CAPACITOR	0.022μF,25V
C112	QCYA1EK-223	CAPACITOR	0.022μF,25V
C113	QCYA1EK-223	CAPACITOR	0.022μF,25V
C114	QCYA1EK-223	CAPACITOR	0.022μF,25V
C115	QCYA1EK-223	CAPACITOR	0.022μF,25V
C116	QCYA1EK-223	CAPACITOR	0.022μF,25V
C117	QCYA1EK-223	CAPACITOR	0.022μF,25V
C118	QCYA1EK-223	CAPACITOR	0.022μF,25V
C119	QCYA1EK-223	CAPACITOR	0.022μF,25V
C120	QCYA1HK-331	CAPACITOR	330pF,50V
C121	QCYA1EK-683	CAPACITOR	0.068μF,25V
C123	QCTA1CH-150	CAPACITOR	15pF,16V
C124	QCTA1CH-150	CAPACITOR	15pF,16V
C125	QCTA1CH-150	CAPACITOR	15pF,16V
C126	QCTA1CH-150	CAPACITOR	15pF,16V
C127	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C129	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C130	QCTA1CH-470	CAPACITOR	47pF,16V
C231	QCYA1HK-471	CAPACITOR	470pF,50V
C232	QCYA1EK-223	CAPACITOR	0.022μF,25V
C246	QCYA1HK-103	CAPACITOR	0.01μF,50V
C248	QCTA1CH-100	CAPACITOR	10pF,16V
C271	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
C276	QCC11CJ-104	CAPACITOR	0.1μF,16V
C277	QCTA1CH-180	CAPACITOR	18pF,16V
C301	QEKJ1CM-106	E CAPACITOR	10μF,16V
C302	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C303	QEKJ1HM-105	E CAPACITOR	1μF,50V
C304	QCYA1EK-683	CAPACITOR	0.068μF,25V
C306	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C307	QCYA1HK-153	CAPACITOR	0.015μF,50V
C308	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
C309	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C310	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C312	QFLC1HJ-472Z	F CAPACITOR	0.0047μF,50V
C313	QFV11HJ-223AZ	F CAPACITOR	0.022μF,50V
C314	QFV11HJ-123AZ	F CAPACITOR	0.012μF,50V
C315	QEKJ1HM-105	E CAPACITOR	1μF,50V
C317	QEKJ1CM-106	E CAPACITOR	10μF,16V
C318	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C319	QCYA1EK-223	CAPACITOR	0.022μF,25V
C320	QFLC1HJ-823Z	F CAPACITOR	0.082μF,50V
C321	QCYA1HK-331	CAPACITOR	330pF,50V
C327	QEKJ1CM-107	E CAPACITOR	100μF,16V
C401	QEKJ1CM-106	E CAPACITOR	10μF,16V
C402	QEKJ1CM-106	E CAPACITOR	10μF,16V
C404	QEKJ1CM-336	E CAPACITOR	33μF,16V
C405	QCYA1EK-473	CAPACITOR	0.047μF,25V
C406	QEKJ1CM-106	E CAPACITOR	10μF,16V
C407	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C408	QCYA1HK-153	CAPACITOR	0.015μF,50V
C409	QCYA1HK-103	CAPACITOR	0.01μF,50V
C415	QCYA1HK-103	CAPACITOR	0.01μF,50V
C416	QCYA1EK-473	CAPACITOR	0.047μF,25V
C417	QETC1HM-224	E CAPACITOR	0.22μF,50V
C419	QCYA1HK-103	CAPACITOR	0.01μF,50V
C420	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C421	QCYA1HK-153	CAPACITOR	0.015μF,50V
C422	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C423	QEKJ1CM-106	E CAPACITOR	10μF,16V
C424	QCYA1EK-473	CAPACITOR	0.047μF,25V
C425	QEKJ1CM-336	E CAPACITOR	33μF,16V
C427	QEKJ1CM-106	E CAPACITOR	10μF,16V
C428	QEKJ1CM-106	E CAPACITOR	10μF,16V
C429	QEKJ1CM-106	E CAPACITOR	10μF,16V
C431	QEKJ1CM-476	E CAPACITOR	47μF,16V
C432	QEKJ1HM-105	E CAPACITOR	1μF,50V
C433	QEKJ1CM-106	E CAPACITOR	10μF,16V
C434	QETC1CM-476	E CAPACITOR	47μF,16V
C435	QETC1CM-476	E CAPACITOR	47μF,16V
C436	QETC1CM-476	E CAPACITOR	47μF,16V
C437	QEKJ1CM-106	E CAPACITOR	10μF,16V
C438	QETC1HM-105	E CAPACITOR	1μF,50V
C439	QETC1HM-105	E CAPACITOR	1μF,50V
C440	QEKJ1CM-336	E CAPACITOR	33μF,16V
C441	QEKJ1CM-336	E CAPACITOR	33μF,16V
C443	QEKJ1CM-106	E CAPACITOR	10μF,16V
C461	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C501	QCYA1HK-103	CAPACITOR	0.01μF,50V
C502	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C503	QCYA1HK-103	CAPACITOR	0.01μF,50V
C504	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C505	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
C506	QCYA1EK-104	CAPACITOR	0.1μF,25V
C507	QCYA1EK-563	CAPACITOR	0.056μF,25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C508	QCYA1HK-221	CAPACITOR	220pF,50V
	C509	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C510	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C511	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C512	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C513	QCTA1CH-331	CAPACITOR	330pF,16V
	C517	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C518	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C519	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C521	QCYA1HK-561	CAPACITOR	560pF,50V
	C701	QAT3120-450Z	TRIM CAPACITOR,TIMER CLOCK	
	C702	QCTA1CH-180	CAPACITOR	18pF,16V
	C703	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C704	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C709	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C710	QCTA1CH-101	CAPACITOR	100pF,16V
	C711	QCTA1CH-101	CAPACITOR	100pF,16V
	C712	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C715	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C717	QEKJ1CM-336	E CAPACITOR	33μF,16V
	C719	PU60676-224	E CAPACITOR	0.22μF,5.5V
	C730	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C731	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C736	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C740	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C750	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C852	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C854	QCTA1CH-270	CAPACITOR	27pF,16V
⚠	C901	QFZ9022-683	F CAPACITOR	0.068μF
	C906	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C907	QCZ0302-330Z	CAPACITOR	33pF
	C908	QFV21HJ-104AZ	F CAPACITOR	0.1μF,50V
	C910	PECA0738-826	E CAPACITOR	82μF
⚠	C911	QCZ9071-222	CAPACITOR	0.0022μF
	C912	QCYA1HJ-471	CAPACITOR	470pF,50V
	C915	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
	C916	QCBB1HJ-271	CAPACITOR	270pF,50V
	C917	QCZ0212-472	CAPACITOR	0.0047μF,1kV
	C951	QEMR1AM-107	E CAPACITOR	100μF,10V
	C953	QEM91AM-687	E CAPACITOR	680μF,10V
	C954	QEM91CM-827	E CAPACITOR	820μF,16V
	C959	QETC1JM-226	E CAPACITOR	22μF,63V
	C960	QETC1HM-226	E CAPACITOR	22μF,50V
	C961	QCYA1HJ-103	CAPACITOR	0.01μF,50V
	C962	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C963	QETC1AM-107	E CAPACITOR	100μF,10V
	C964	QEKJ1CM-226	E CAPACITOR	22μF,16V
	C965	QETC1AM-107	E CAPACITOR	100μF,10V
	C966	QETC1HM-106	E CAPACITOR	10μF,50V
	C969	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
	C971	QETC1AM-227	E CAPACITOR	220μF,10V
	C972	QETC1CM-337	E CAPACITOR	330μF,16V
	C1002	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1003	QETF1HM-224	E CAPACITOR	0.22μF,50V
	C1004	QETF1HM-106	E CAPACITOR	10μF,50V
	C1005	QFN31HK-153	F CAPACITOR	0.015μF,50V
	C1006	QFN31HK-333	F CAPACITOR	0.033μF,50V
	C1007	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1009	QETF1HM-106	E CAPACITOR	10μF,50V
	C1012	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C1014	QETF1HM-104	E CAPACITOR	0.1μF,50V
	C1015	QCYA1EK-223	CAPACITOR	0.022μF,25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1016	QETF1HM-225	E CAPACITOR	2.2μF,50V
	C1017	QCYA1EK-473	CAPACITOR	0.047μF,25V
	C1019	QETC1CM-107	E CAPACITOR	100μF,16V
	C1101	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1103	QCYA1EK-563	CAPACITOR	0.056μF,25V
	C1104	QCTA1CH-101	CAPACITOR	100pF,16V
	C1106	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C1107	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C1110	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C1111	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C1113	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C1114	QEKJ1CM-106	E CAPACITOR	10μF,16V
	C1115	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
	C1116	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1142	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1143	QCTA1CH-390	CAPACITOR	39pF,16V
	C1144	QCTA1CH-470	CAPACITOR	47pF,16V
	C1145	QCTA1CH-390	CAPACITOR	39pF,16V
	C1146	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C1301	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1302	QCTA1CH-820	CAPACITOR	82pF,16V
	C1303	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C1304	QCTA1CH-560	CAPACITOR	56pF,16V
	C1305	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
	C1306	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C1307	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C1308	QCTA1CH-330	CAPACITOR	33pF,16V
	C1309	QCTA1CH-330	CAPACITOR	33pF,16V
	C1320	QCYA1HK-103	CAPACITOR	0.01μF,50V
	L1	PELN0530-100JZ	COIL	10μH
	L3	PU59152-100J	COIL	10μH
	L4	PELN0975-101JZ	COIL	100μH
	L5	PU59152-820J	COIL	82μH
	L6	PELN0975-101JZ	COIL	100μH
	L7	PU59152-221J	COIL	220μH
	L8	PELN0975-101JZ	COIL	100μH
	L9	PU59152-680J	COIL	68μH
	L10	PU59152-680J	COIL	68μH
	L11	PELN0975-101JZ	COIL	100μH
	L18	PU59152-120J	COIL	12μH
	L101	PELN0530-101JZ	COIL	100μH
	L103	PU59152-181J	COIL	180μH
	L211	PU59152-390J	COIL	39μH
	L215	PU59152-101J	COIL	100μH
	L301	PU58308-123J	COIL	12mH
	L501	PELN0530-100JZ	COIL	10μH
	L502	PU59152-101J	COIL	100μH
	L703	PU48530-100K	COIL	10μH
	L951	PELN0687	COIL	
	L953	PELN0687	COIL	
	L1301	PELN0975-101JZ	COIL	100μH
	L1302	PU59152-220J	COIL	22μH
	L1303	PU59152-220J	COIL	22μH
	L1305	PU59152-330J	COIL	33μH
	EQ1	PELN0742	EQUALIZER	
⚠	CF701	PEVB0594-Z	RESONATOR	
⚠	X1	PEVB0679	CRYSTAL RESONATOR	
⚠	X2	PEVB0678	CRYSTAL RESONATOR	
⚠	X701	PEVB0422	CRYSTAL RESONATOR	
⚠	X1141	PEVB0476	CRYSTAL RESONATOR	
	S1001	PESW0671	SLIDE SWITCH,TEST	
	S1002	PESW0671	SLIDE SWITCH,SYSTEM	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	K901	PELN0662-Z	FERRITE BEAD	
⚠	PC901	PS2561L-1(WL)	PH COUPLER	
	PS701	PU61433	REEL SENSOR	
	PS702	PU61433	REEL SENSOR	
⚠	T301	PELN0832	OSC TRANSFORMER	
⚠	T901	PELN1173	SW TRANS	
	T1001	QQR0007-001	LC TRAP	
	BK1	PQ21944-1-2	TRANS BRACKET	
⚠	HS1	PQ45788-1-1	HEAT SINK,Q901	
	J1	PU61149-3	PIN JACK,VIDEO IN/OUT	
	J2	PEMC1065-02	PIN JACK(SW),AUDIO IN/OUT R	
	J3	PEMC1065-03	PIN JACK(SW),AUDIO IN/OUT L	
	W1	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	W2	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
⚠	FC901	PEMC0965-Z	FUSE CLIP,F901	
⚠	FC902	PEMC0965-Z	FUSE CLIP,F901	
	J701	PU60612	MINI JACK,RAE/PAUSE	
⚠	LF901	PU59707	LINE FILTER	
	OT1	PQM30029-121	SPACER	
	OT2	PQ46408-1-2	SENSOR CAP,Q704	
	OT3	PQ46408-1-2	SENSOR CAP,Q705	
	OT4	SDST3006Z	SCREW,Q901	
	SD1	PQ35384	SHIELD CASE,PRE/REC	
	SD2	PQ46515	SHIELD PLATE,PRE/REC	
	TB1	PQ35383B-1	TERMINAL BOARD ASSY	
⚠	TU1001	PERF0249	TUNER UNIT	
⚠	UN1001	PERF0254	IF UNIT	
	CN1	PEMC1163-009	CONNECTOR,(1-9)UPPER DRUM	
	CN301	PU60727-7	CONNECTOR,(1-7)A/C HEAD	
	CN302	PU60727-2	CONNECTOR,(1-2)FE HEAD	
	CN701	PEMC1077	CONNECTOR,(1-8)CAP MDA	
	CN702	PU61434-1-1	CONNECTOR,(1-5)ROTARY ENCODER	
	CN703	PU60910-2	CONNECTOR,(1-2)LOADING MOTOR	
	CN802	PEMC1101-013	CONNECTOR,(3-15)DISPLAY	
	CN852	PU59555-8	CONNECTOR,(1-8)JOG/SHUTTLE	
⚠	CN901	PU60250-2	CONNECTOR,(1-2)AC IN	
	CN1102	PEMC1101-004	CONNECTOR,(1-4)DRUM MOTOR	
	CN1403	PEMC1101-005	CONNECTOR,(1-5)SW/JACK	
⚠	CP701	ICP-N25	CIRCUIT PROTECTOR	
⚠	CP901	ICP-N20	CIRCUIT PROTECTOR	
⚠	CP902	ICP-N25	CIRCUIT PROTECTOR	
⚠	CP1101	ICP-N15	CIRCUIT PROTECTOR	
⚠	F901	QMF51E2-1R25J1	FUSE	T1.2A

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AUDIO/CONTROL HEAD BOARD ASSY <12>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PW1	PB40068A-01	A/CTL HEAD BOARD ASSEMBLY	
	CN1	PU60910-107	CONNECTOR,(1-7) MAIN	

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DISPLAY BOARD ASSEMBLY <28>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PW1	PB11028A1	DISPLAY BOARD ASSEMBLY	
	IC1201	UPD16311GC(P)	IC	
		or UPD16311GC(K)	IC	
		or UPD16311GC(E)	IC	
	IC1202	GP1U581X	IR DETECT UNIT	
	D1201	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1202	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1203	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1204	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1206	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1207	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1209	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1210	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1211	RD4.7ES-T1B2	ZENER DIODE	
	D1220	1N4148M	DIODE	
		or 1SS133	DIODE	
	D1221	1N4148M	DIODE	
		or 1SS133	DIODE	
	R1201	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1202	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1203	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1204	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1205	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R1206	QRD161J-102	RESISTOR	1kΩ,1/6W
	R1207	QRD161J-102	RESISTOR	1kΩ,1/6W
	R1208	QRD161J-563	RESISTOR	56kΩ,1/6W
	R1209	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1210	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1211	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1212	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1213	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1214	QRD161J-333	RESISTOR	33kΩ,1/6W
	R1215	QRD161J-103	RESISTOR	10kΩ,1/6W
	R1216	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R1217	QRD161J-151	RESISTOR	150Ω,1/6W
	R1219	QRD161J-103	RESISTOR	10kΩ,1/6W
	C1201	QEKC0JM-476	E CAPACITOR	47μF,6.3V
	C1202	QCFB1HZ-104	CAPACITOR	0.1μF,50V
	C1203	QEKC1HM-106	E CAPACITOR	10μF,50V
	C1204	QCSB1HJ-330	CAPACITOR	33pF,50V
	C1205	QCSB1HJ-330	CAPACITOR	33pF,50V
	C1206	QEKC0JM-227	E CAPACITOR	220μF,6.3V
	C1207	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C1210	QCFB1HZ-473	CAPACITOR	0.047μF,50V
	C1211	QCFB1HZ-473	CAPACITOR	0.047μF,50V
	C1213	QCFB1HZ-104	CAPACITOR	0.1μF,50V
	S1205	PESW0525-02Z	TACT SWITCH,PAUSE	
	S1206	PESW0525-02Z	TACT SWITCH,REC	
	S1207	PESW0525-02Z	TACT SWITCH,PLAY	
	S1208	PESW0525-02Z	TACT SWITCH,STOP/EJECT	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	S1225	PESW0525-02Z	TACT SWITCH,CH SET
	S1236	PESW0525-02Z	TACT SWITCH,RENTAL RET
	DI1201	PEDP0160	FLUORESCENT DISPLAY PANEL
	HD1	PQ34668	FDP HOLDER(L),DI1201
	HD2	PQ34669	FDP HOLDER(R),DI1201
	FW1201	PW30101-60AA442	PARALLEL WIRE,REC SAFETY
	FW1202	PW30101-60AA442	PARALLEL WIRE,CASSETTE SWITCH
	CN1201	PEMC1101-113	CONNECTOR,(1-13)MAIN
	CN1202	PEMC0889-015	CONNECTOR,(1-15)SW/JACK

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REC SAFETY BOARD ASSEMBLY <32>

REF No.	PART No.	PART NAME, DESCRIPTION
PW3	PB11028A3	REC SAFETY BOARD ASSEMBLY
S1241	PESW0589	PUSH SWITCH

****

CASSETTE SW BOARD ASSEMBLY <33>

REF No.	PART No.	PART NAME, DESCRIPTION
PW4	PB11028A4	CASSETTE SWITCH BOARD ASSY
S1242	PU61320	PUSH SWITCH

****

SW/JACK BOARD ASSEMBLY <36>

REF No.	PART No.	PART NAME, DESCRIPTION	
PW2	PB11028A2	SWITCH /JACK BOARD ASSEMBLY	
D1212	SLR-342VC3F	LE DIODE,OPERATE	
D1213	SLR-342MC3F	LE DIODE,WIDE QUALI	
D1214	SLR-342DC3F	LE DIODE,AUTO SP/LP	
D1235	1N4148M	DIODE	
	or 1SS133	DIODE	
D1236	1N4148M	DIODE	
	or 1SS133	DIODE	
R1230	QRD161J-560	RESISTOR	56Ω,1/6W
R1231	QRD161J-200	RESISTOR	20Ω,1/6W
R1241	QRD161J-331	RESISTOR	330Ω,1/6W
R1242	QRD161J-331	RESISTOR	330Ω,1/6W
R1243	QRD161J-331	RESISTOR	330Ω,1/6W
S1203	PESW0525-02Z	TACT SWITCH,OPERATE	
S1209	PESW0525-02Z	TACT SWITCH,COLOUR SYSTEM	
S1210	PESW0525-02Z	TACT SWITCH,TIMER	
S1213	PESW0525-02Z	TACT SWITCH,REVIEW	
S1215	PESW0525-02Z	TACT SWITCH,SP/LP/EP	
S1216	PESW0525-02Z	TACT SWITCH,AUTO SP/LP	
S1222	PESW0525-02Z	TACT SWITCH,AUDIO MONI	
S1234	PESW0525-02Z	TACT SWITCH,WIDE	
S1240	PESW0525-02Z	TACT SWITCH,S.FINDER	
HD1	PQM30038-6	LED HOLDER	
HD2	PQM30038-2-2	LED HOLDER	
HD3	PQM30038-2-2	LED HOLDER	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	J1201	PEMC1076	PIN JACK(SW),VIDEO
	J1202	PEMC1076	PIN JACK(SW),AUDIO L
	J1203	PEMC1076	PIN JACK(SW),AUDIO R
	CN1203	PEMC0825-015	CONNECTOR,(1-15)DISPLAY
	CN1204	PEMC1101-005	CONNECTOR,(1-5)MAIN

SECTION 6
TECHNICAL INFORMATION

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function(IC701) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	S.CURVE	IN	TUNING CHECK
2	AVG FM	IN	AUTO TRACKING DATA(AVRG VOLTAGE OF PB LEVEL INPUT)
3	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
4	6.5H DET	IN	PB SWITCHING POINT ADJUST PULSE
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	TIMER CLOCK(32.768KHz)
8	X1	-	TIMER CLOCK(32.768KHz)
9	VSS	-	GND
10	OSC1	IN	SYSTEM CLOCK(10MHz)
11	OSC2	OUT	SYSTEM CLOCK(10MHz)
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	LSC	IN	MECHANISM MODE DETECT(C)
15	LSB	IN	MECHANISM MODE DETECT(B)
16	LSA	IN	MECHANISM MODE DETECT(A)
17	C.L.END	IN	CASSETTE TAPE LOAD SWITCH(CASSETTE IN:L)
18	RECSF	IN	REC SAFETY SWITCH DETECT(SW ON:L)
19	STTS	IN	LEADER TAPE DETECT(DETECT ON:L)
20	P.CTL(L)	OUT	POWER ON/OFF CONTROL (POWER ON:H)
21	MESECAM DET	IN	MESECAM MODE:H
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
25	IP ON(H)	OUT	INCREDIBLE PICTURE ON/OFF CONTROL(IP ON:H)
26	P.MUTE(L)	OUT	PICTURE MUTE CONROL(MUTE ON:L)
27	NTSC358(H)	OUT	3.58MHz NTSC MODE:H
28	LCM3	OUT	LOADING MOTOR DRIVE(3)
29	R.PAUSE	OUT	REMOTE PAUSE CONTROL(PAUSE ON:L)
30	KC STB	-	NC
31	REC ST	OUT	REC START:H
32	K SCL	-	NC
33	K SDA	-	NC
34	ECHO CS	-	NC
35	H.RECST(L)	OUT	HiFi AUDIO REC START:L
36	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
37	B/W(L)	OUT	BLACK/WHITE SWITCH DETECT
38	REC(H)	OUT	REC MODE:H
39	SYNC DET	IN	SYNC DWTWCT(NO SYNC:H)
40	PROTECT	IN	SWD5V/12V DETECT

Table 6-1-1 SYSCON CPU pin function(1/2)

6.1.2 Syscon CPU pin function(IC701) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	EXP DATA2	OUT	EXPANDER IC(IC706) DATA OUTPUT
42	EXP DATA1	OUT	EXPANDER IC(IC705) DATA OUTPUT
43	I2C SCL	OUT	DEMODULATOR DATA TRANSFER CLOCK
44	I2C SDA	OUT	DEMODULATOR DATA OUTPUT
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	ND(L)	OUT	NORMAL AUDIO DETECT(NORMAL AUDIO:L)
47	COMB OFF(L)	OUT	COMB FILTER ON/OFF CONTROL
48	RAE	-	NC
49	ENDS	IN	TRAILER TAPE DETECT(DETECT ON:L)
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	MUSIC DET	IN	MUSIC DETECT(DETECT ON:H)
52	CTL C/D	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	V.SYNC	IN	V.SYNC INPUT
54	CAP REV	OUT	CAPSTAN MOTOR CONTROL(FWD:H/REV:L)
55	OSD CS	OUT	ON SCREEN IC CHIP SELECT
56	COM-CLOCK	OUT	MEMORY IC DATA TRANSFER CLOCK
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN/FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	H DATA	OUT	VIDEO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	H CLK	OUT	VIDEO IC DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	SERVO DATA	OUT	SERVO IC CONTROL DATA
65	LCM2	OUT	LOADING MOTOR DRIVE(2)
66	LCM1	OUT	LOADING MOTOR DRIVE(1)
67	CTL CLOCK	IN	INDEX CONTROL
68	PWM	OUT	TUNING PULSE
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	AUDIO ENV	IN	DC INPUT for AUTO TRACKING (AUDIO)
74	ECHO EVR	-	NC
75	DRUM V	OUT	DRUM MOTOR VOLTAGE CONTROL
76	CAP V	OUT	CAPSTAN MOTOR VOLTAGE DETECT
77	DV DET	IN	DRUM DRIVE VOLTAGE DET
78	FMA S.CURVE	IN	TUNING CHECK(SOUND DETECT)
79	IND(L)	IN	AUDIO INDICATOR LEXEL INPUT(Lch)
80	IND(R)	IN	AUDIO INDICATOR LEXEL INPUT(Rch)

Table 6-1-2 SYSCON CPU pin function(1/2)

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